

Doctor of Business Administration

Business School Perceptions of the Possible Impact of the Teaching Excellence Framework: A Complex Adaptive Systems Perspective.

This thesis is submitted in accordance with the requirements of the University of Chester for
the degree of Doctor of Business Administration by Tadzio Ryszard Jodlowski

22th October 2018

Table of Contents

Table of Contents	i
List of Figures and Tables.....	iii
List of Abbreviations	iii
Abstract:	v
Learning Pathways	vi
Acknowledgements	vii
Chapter 1: Introduction.....	1
1.1 The practice issue	1
1.2 The research gap.....	6
1.3 The research question, aim, and objectives.....	6
1.4 Outline Methodology.....	6
1.5 Proposed contribution to theory and practice.	9
1.6 Chapter introductions	10
Chapter 2: Literature Review.....	11
2.1 Introduction	11
2.2 Complex landscapes within Higher Education	11
2.3 Influence of Neo-liberalism.....	13
2.4 Competition between Business Schools	14
2.5 Competition from the private sector	15
2.6 Competition from International markets.....	17
2.7 Manifestation of the Teaching Excellence Framework	18
2.8 TEF Green and White paper.....	20
2.9 Response to the Green and White paper.....	21
2.10 Implementation of the TEF	22
2.11 Ontological anxiety.....	23
2.12 Complex Adaptive Systems.....	25
2.13 Complexity within organisations.	26
2.14 Emergence and Adaption.....	27
2.15 Signals and Boundaries and the Edge of Chaos.....	29
2.16 Clockware and Swarmware.....	30
2.17 Conclusion:.....	31
2.18 Research question, aim, and objectives.....	32

Chapter 3: Methodology	34
3.1 Philosophical stance.....	35
3.2 Research strategy and design:	36
3.3 Researcher role and bias.....	37
3.4 Justification for the adopted, research strategy	38
3.5 Methods for data collection and sampling	39
3.6 Methods for data analysis.....	43
3.7 Ethics	50
3.8 Limitations	51
3.9 Summary	52
Chapter Four: Data analysis and findings	52
4.1 Introduction	52
4.2 Emergence	53
4.3 Adaption	60
4.4 Signals and Boundaries	64
4.5 Edge of Chaos	68
4.6 Summary	74
Chapter Five: Discussion	74
5.1 Result 1: A theme of business school response towards the TEF	75
5.2 Result 2: A theme of business school responses towards complexity.....	76
5.3 Result 3: A theme of business school responses towards competition	77
5.4 Result 4: A theme of business school responses in relation to time	78
5.5 Result 5: A theme of business school responses to processes	79
5.6 Comparison to the introduction	81
Chapter Six: Implications and recommendations	82
Chapter Seven: Contributions and Conclusion	84
References.....	97
Appendices.....	100

List of Figures and Tables

Appendices

Appendix 1: Education policy timeline	Page 100
Appendix 2: Ethical principles agreement form	Page 104
Appendix 3: Interview questions and prompts	Page 106
Appendix 4: Respondent agreement form (example)	Page 107
Appendix 5: Sample interview	Page 108

List of Figures

Figure 3.1: Research design	Page 47
Figure 4.1: Cluster analysis of the TEF	Page 51
Figure 4.2: Cluster analysis of organisational change	Page 54
Figure 4.3: Cluster analysis of organisational response	Page 57
Figure 4.4: Cluster analysis of time factors	Page 59
Figure 4.5: Cluster analysis of government influence	Page 62
Figure 4.6: Cluster analysis of the NSS	Page 63
Figure 4.7: Cluster analysis of the investment curve	Page 66
Figure 4.8: Cluster analysis of the influence of America	Page 68
Figure 5.1: Discussion structure	Page 72
Figure 6.1: The TEF Model and its interconnecting aspects	Page 79
Figure 6.2: Recommendations for improving responses towards the TEF	Page 80
Figure 6.3: Strategic choices within the Edge of Chaos	Page 80
Figure 6.4: A comparison of equilibrium and punctuated equilibrium concepts in relation to the evolution of higher education 2012-2017	Page 81
Figure 6.5: Business School responses towards the TEF in 2017	Page 81

List of Tables

Table 3.1: Comparison of quantitative and qualitative approaches	Page 41
Table 3.2: Respondents roles and dates of interviews	Page 44
Table 3.3: Example of respondent comments	Page 45
Table 3.4: Themes which emerged from the data	Page 46
Table 3.5: Final themes developed from the initial themes	Page 46
Table 7.1: Research question, results, and conclusion	Page 85

List of Abbreviations

DOS: Department of Students	
DLHE: Destination of leavers from Higher Education	
EU: European Union	
HE: Higher Education	
HEA: Higher Education Authority	
HEI: Higher Education Institute	
INSEAD: Institut Européen d'Administration des Affaires	

KPI: Key Performance Indicator	
NSS: National Student Survey	
NUS: National Union of Students	
ONS: Office for National Statistics	
SRU: Science Research Unit	
TEF: Teaching Excellence Framework	
THE: Times Higher Education	
REF: Research Excellence Framework	
UCU: University and College Union	
UKRI: United Kingdom Research Institute	
VCSEI: Vice Chancellors Strategic Excellence Initiative	

Abstract:

The implementation of the Teaching Excellence Framework (TEF) at institutional level 2017, presents universities with the challenge of responding to a government policy which has the capacity to change the Higher Education landscape. Educational policies are capable of introducing complexity into organisations and inspiring disruptive behaviour. The strategic response to policy implementation within universities is often thought to be the domain of business schools due to their assumed autonomy and links to management. The responses of business schools towards policy implementation have not been previously explored. Therefore, the research explores the response of business schools towards the Institutional level TEF as well as wider policy changes, within the context of an assumed sense of autonomy.

An interpretivist research methodology was chosen in order to explore business school responses towards the voluntary participation of the TEF in 2017 through interviews with respondents from universities across the country. This includes analysis of sense making from respondents as they drawing upon their respective knowledge networks. Qualitative research was utilised in order to explore the response from business schools and increase the understanding of policy response within the Higher Education sector. The research utilised purposive sampling followed by the use of snowball sampling. Complex Adaptive Systems theory was used a theoretical lens, and the data was explored though the use of thematic analysis which examined cluster formations in NVivo and identified patterns of data emerging into four main CAS areas.

The findings suggest that business school responses towards the Institutional Level TEF in 2017 represents a moment in time when participating universities found themselves responding to an educational policy which contained an evolutionary element, capable of introducing change into the existing order - thus providing an example of punctuated equilibrium. The response to the TEF was hierarchical, and involved individuals reporting to their respective Vice Chancellors, while receiving support from self-regulating groups. The TEF is identified as a Complex Adaptive System due to its none-linear and unpredictable behaviour. Finally, Zimmerman's Zone of Complexity is utilised in order to illustrate the manner in which the Edge of Chaos is capable of representing an opportunity for innovative though, when the decision is made to alternate between managerial clockware and innovative swarmware.

Key words: *Teaching Excellence Framework, Business Schools, Complexity, Emergence, Signals and Boundaries, Edge of Chaos, Clockware and Swarmware.*

The learning pathways which were developed from each unit whilst studying for Doctorate in Business Administration at the University of Chester.

1. Personal and Professional Review: Interaction with other candidates

There were several significant learning pathways which developed during the process of studying for my Doctorate in Business Administration. My own starting point was an interest in leadership and organisational change, which continued from my MRes. There were approximately fifteen perspective doctoral candidates in my cohort and they included a broad range of professionals from the army, police, business, and the church. The sharing of issues from such a diverse collection of organisations provided a richness of information. This made me realise that the knowledge I had brought to my studies was transferable and was developing into a broader interest in business administration across all organisations.

2. Action Learning: Global Issues. Presentation group work: Nissan

The group work exercise encouraged us to consider the complexity of a global company by studying the leadership of Carlos Ghosn as he managed the largest car making alliance in the world - Renault, Nissan and Mitsubishi. This broadened my awareness of the scale of complexity which could develop between organisations as well as the limits of management. I drew upon Hofstede's work on culture's consequences, as this compares values, behaviours, institutions, and organizations across nations. The presentation helped me to define an interest in possible similarities between seemingly different organisations, such as the Higher Education Sector and the National Health Service. This was a nexus which I would later explore in my thesis.

3. Action Learning: Critical Thinking. Presentation individual work: Bricolage

The third section focused on the development of academic skills at doctoral level, and the critical analysis of journal articles. This introduced me to a whole new lexicon of language which emanated from critical management studies. We were asked to choose a specific word from this lexicon and to provide presentation on it. I choose the word "bricolage". This inspired the idea that my planned thesis could draw upon a wide range of influences in order to create a unique piece of work. There were also other words such as "opticon" which inspired me to think that a piece of academic writing should provide the reader with a viewing point which celebrates multiple perspectives. I was also given the opportunity to review four journal articles for Euro Med, by my lecturer, which increased my critical writing and analytical skills.

4. Research Methods work based learning: Game theory and introduction to complexity theory.

I was encouraged to turn my attention to the administrative nature of organisations, and a wide range of organisations was discussed in class. There was also discussion of strategic choice, the prisoner's dilemma, and game theory. This led me to explore the work of the author of the prisoner's dilemma who was Robert Axelrod, this in turn led to a discovery of the group of leading American complexity academics, the BACH group: Burkes, Axelrod, Cohen, and Holland. Wider reading into this group directed me towards the Santa-Fe Institute and Complex Adaptive Systems (CAS) as a potential theoretical lens. In the mean-time the Institutional level Teaching Excellence Framework (2016) was discussed by my tutors. Thereafter, the study of the institutional level TEF (2016) and a CAS theoretical lens merged into an idea which I then put forward as my doctoral proposal. This was accepted.

Acknowledgments

I would like to thank Manchester Metropolitan University for supporting my doctoral studies, and the University of Chester for delivering a successful doctoral programme. I am grateful to the tutors who contributed their insights during my studies at the University of Chester and these include; Professor Peter Stokes, Professor Paul Manning, Professor Danny Moss, and Professor Caroline Rowland. I am also grateful for the camaraderie of my fellow doctoral candidates.

The completion of this thesis would not have been possible without the thoughtful guidance and encouragement of my supervisors Professor Tony Wall and Professor Vish Maheshwari. I am grateful to Professor Wall for encouraging me to explore new areas of knowledge, and to Professor Maheshwari for encouraging me to consider the structure and form of my analysis.

My thanks to all the respondents from universities across the country who agreed to be interviewed for this thesis. Their insights represent an important part of this research and their goodwill represents an important part of higher education.

I am grateful to my family for their love and support throughout the years.

This thesis is dedicated to my parents Czesław Jodlowski and Irena Jodlowska.

Tadzio Jodlowski

Senior Lecturer in Marketing and International Projects

Manchester Metropolitan University Business School, England

Chapter 1: Introduction

1.1 The practice issue

The author of this research has worked in Higher Education for over a decade in numerous educational roles, and in that time responded to numerous changes which have been promoted by both internal and external policies. Within this time-frame the author has also experienced working on more than thirty units, under two successive Vice Chancellors, and four successive Heads of Department. This illustrates the level of organisational change which occurs over time, and highlights the numerous responses which are necessary in order to manage such circumstances. Significant change within universities is often connected to an educational policy which are capable of generating complexity within existing systems. Traditional responses towards emerging policies often center upon the restoration of equilibrium through managerial control. However, in recent years theories have developed around chaos and complexity which question this approach, while suggesting that uncertainty represents an existential state in which innovation is the key.

Therefore, members of staff are encouraged to become aware of different approaches to problem solving within CAS theory. This includes developing an awareness of significant texts such as Kelly's *Out of Control* (1994) Wheatley's *Leadership and the New Science* (1999), Zimmerman's *Edgware – insights from complexity science for health care leaders* (2001), McCorduck's, *The Edge of Chaos* (2007) and Holland's *Signals and Boundaries* (2012). These texts form attempts to introduce complexity theories into the mainstream and in some most cases, into the area of management – although never within a university context. Kelley's notion of *Clockware* and *Swarmware* is introduced, with *Clockware* representing a traditional hierarchical top down hierarchical attempts to implement new systems into existing complexity. The also relates to the idea that a new system must be accepted by the organisation and that failure to achieve this is usually remedied by the employment of a new manager with another system – although this rarely works. In contrast, Kelly (1994) suggests that mixture of both *Clockware* (managerial) and *Swarmware* (creative thinking from staff) provides the answer. In this sense, *Swarmware* celebrates the *Edge of Chaos* and utilises staff creativity, which is often a marginalised resource. Thus, the idea that alternation between *Clockware* and *Swarmware* as the most effective response at the *Edge of Chaos* is a pertinent aspect within this research.

Studies by researchers such as Moulton and Sandfort (2017) suggest that the process of policy implementation has been a topic of discussion for half a century, and that such discussion

often alludes to gaps which exist between the ambitious aspirations of policy makers, diffuse intergovernmental relations, and existing problems within the public arena. Moreover, Heidbreder (2017) argues that policy implementation is linked to compliance and an inherent top-down state-centred bias, while Tripp, et al (2015) suggest that the influence of government remains prominent within universities and that this is evident in a recent policy such as the Research Excellence Framework (REF). Within this context, the Teaching Excellence Framework (TEF) at Institutional-Level, represents a subsequent educational policy which seeks to introduce significant change in to the Higher Education sector through increased metrification and an unprecedented level of competition (HEA, 2016). Therefore, the implementation of the TEF at institutional level and its possible development into a subject specific format requires a thoughtful response.

The Minister for Education and Science Jo Johnson during 2015, described the purpose of the Institutional-Level TEF as perceived in Business Schools in 2016 as; “driving good teaching up so that it becomes excellent...in order to root out bad teaching... and to provide value for money for both students and taxpayers...through a clear set of outcome-focused criteria and metrics” (Hansard, 2015). However, there has also been criticism of the Institutional-Level TEF from Vice Chancellors of both Russell Group and Post-92 universities in relation to the commodification of Higher Education in contrast to its transformative capacity. From a political perspective, the House of Commons Business, Innovation and Skills Committee (BIS) (2016) suggests that the purpose of the Institutional-Level TEF is to: 1) Encourage excellent teaching for all students 2) Promote improvement by highlighting exemplary practice 3) Promote cultural change to recognise teaching as equal in status to research 4) Provide clear information on teaching quality to assist student choice 5) Provide clear information to help employers to recruit students with better and known skills 6) Recognise and respect the diversity of provision and different types of excellence. However, it is also suggested that thirty four of the United Kingdom’s universities are already represented in the top hundred world universities, and that three of the United Kingdom’s universities are in the top ten. Quote: Moreover, it is also suggested that overall, 84% of students are satisfied with their education with only 16% of students expressing dissatisfaction (Govnet, 2016). Furthermore, it has been suggested that the Institutional-Level TEF may not have any significant impact upon raising the standard of good teaching practice, as the difference in elevation between those institutions who are seen to be “meeting Expectations” and those institutions who are seen as being “Excellent” or “Outstanding” equates to approximately £100 per student (HEA, 2016).

According to Burgstahler (2015) the Institutional-Level TEF represents an example of the challenges faced when implementing universal policies within higher education from principles to practice, and this point is previously echoed by Drummond (1998) who discusses the multiple complications which are consistently inherent during the operational establishment of good practice. Furthermore, Hallsworth, et al (2011) argue that there is criticism from some government ministers regarding the level of analytical training provided to civil servants during the policy making process, which is compared to other countries in which formal policy making qualifications are required. Moreover, Raffe (2011) cited in Hodgson and Spours (2016) expresses concern about the negative aspects of *policy borrowing* from International organisations under the guise of *best practice*. This point is developed by Pollitt (2000), cited in Hodgson and Spours (2016), who suggest that policy makers adopting this approach operate within an *expanded present* which does not take into account the history of organisations or provide a long term vision. This is seen as producing a form of *institutional amnesia* in which a policy which is borrowed from a none-proximal educational system, may not always suit the education system within another country. This point is also discussed by Dror (2017), who uses the term *policy science* when examining the reality of public policy making through behavioural science and systems analysis, while exploring the manner in which policies respond to systematic requirements by creating interconnected propositions designed to aggregate problems, causes, and consequences. Within this context, previous research by Lasswell (1971) raises an interesting point when discussing *symbol inflation*, or the misuse of words during the policy development process. This includes a balance of relevant and irrelevant words being instilled along with an awareness of the impact of *inflationary* or *deflationary* expression. Consequently, the challenge for universities remains in finding effective ways of responding to government policies which may be prepared under circumstances which do not allow enough time for consideration of their operational compatibility, limitations, or impact upon existing bureaucratic mechanisms. Therefore, it may be suggested that during policy implementation a dynamic is formed between the hierarchical intent of government policy and the subjective interpretations of those involved within a response process. In this sense, Lowery (2013) argues that policy implementation involves a series of interpretive stages which include consultation, implementation and post-implementation, as well as the practice of *lobbying* which also forms part of the response process.

The researcher is aware that emerging policies such as the Institutional-Level TEF suggest the setting of new boundaries which seek to develop opportunities for students to *pick and mix* their education from standardised interchangeable units. This point was developed by Johnson (2016) who suggested that emerging educational policies such as the Institutional-

Level TEF may ultimately be used as a template for measuring the quality of teaching within an *Intercontinental* higher education system. However, Cantley (2015) argues that strategies which seem to promote increased commodification are also capable of creating professional insecurity amongst academics, due to the manner in which market forces promote intensified managerial control, assessment, audit, and accountability. From an operational perspective, the This point was developed by Johnson (2016) who suggested that the emerging educational policies such as the Institutional-Level TEF represents a set of composite relationships between several bureaucratic mechanisms such as the newly formed Office for Students (OfS) and an independent judging panel which includes representatives from industry. Moreover, the Institutional-Level TEF is being introduced at a time of relative uncertainty within higher education due to increased competition from the private sector and a 2% decrease in university applications across the sector in addition to a rise in apprenticeship schemes, and on-line courses (Govnet, 2016). The Government's Green and White paper on the Institutional-Level TEF includes responses to consultations with Vice Chancellors and the assistance of the Higher Education Academy (HEA). Within these consultations, the Institutional-Level TEF has received its strongest criticism from the Russell Group of universities who remain concerned about the possibilities for reputational damage through the use of imperceptive metrics measurement. These points also reflects concerns which have been raised during the consultation of a previous policy - the Research Excellence Framework (REF), in the following terms:

"We would welcome a lighter touch REF and there are some areas where metrics can be useful, but peer review should remain at the heart of the process, with metrics used where appropriate to complement and aid human judgement" (Russell Group, 2016).

In contrast, others such as Rawls (1987) have previously discussed the topic of metric bias from a different perspective, by suggesting that a bias within the educational system already exists and that Russell Group universities receive significantly higher scores in contrast to *modern universities*, due to their student's awareness of the reputational element attached to their degrees. There is also evidence of a call for the use of metrics to be more sensitive to the diversity of institutions and their subject areas. This is reflected in the following recommendations from a report on the future use of metrics in higher education chaired by Professor James Wilson of the Science and Democracy at the Science Policy Research Unit (SPRU), University of Sussex (2015) which lists eight key areas:

"Robustness: basing metrics on the best possible data in terms of accuracy and scope; ***Humility:*** recognising that quantitative evaluation should support, but not supplant, qualitative, expert assessment; ***Transparency:*** keeping data **collection** and analytical

*processes open and transparent, so that those being evaluated can test and verify the results; **Diversity**: accounting for **variation** by field, and using a variety of indicators to support diversity across the research system; **Reflexivity**: recognising **systemic** and potential effects of indicators and updating them in response.” (Metric Tide, 2016)*

The narrative surrounding metrics has increased significantly since the publication of the Times Higher Education (THE) *mock* Institutional-Level TEF in 2016. This represents an exercise aimed at illustrating how the mechanism of the Institutional-Level TEF might function in practical rather than theoretical terms. The results of the mock Institutional-Level TEF generated several unpredictable results and created a hypothetical league table in which the existing hierarchy of universities was disrupted, and thus suggesting that the forthcoming TEF might behave in an equally unpredictable manner. The results placed Loughborough University in first position and Oxford University in twenty fourth, while contradicting previous statistics suggesting that 89% of students at Russell group universities were satisfied with teaching on their course and that 90% of students found their courses intellectually stimulating (NSS, 2016). This point is echoed by the response to a BIS statement by the Office for National Statistics (ONS) which suggests that “until the data are fit for purpose any analysis is likely to be inaccurate and misleading (ONS, 2016). Additionally, responses towards to an Institutional-Level TEF continue to concentrate upon the development of managerial strategies which are capable of delivering successfully implementation. The role of responding to government policies has previously been assumed to be the duty of business schools due to their perceived autonomy, knowledge of legislation, and links to industry.

Thomas (2012) suggests that Business Schools already provide responses to financial sustainability, decreases in demand for MBA’s, and the development of on-line courses. In contrast, Akrivou and Bradbury-Huang (2015) suggest that business schools are also *social custodians* who are capable of re-envisioning themselves in order to re-introduce the humanistic and transformational aspects of higher education which transcend previous *instrumentalised* approaches of business. Within this context, higher education is now facing the challenge of responding to the Institutional-Level TEF, while also coping with existing complexities which include; high levels of bureaucracy, an evolving customer paradigm, increased administrative duties for teaching staff, a decrease in public funding, and competition from the private sector. In order to develop an increased awareness of the possible implications of the TEF as a significant governmental educational policy, this research seeks to explore business school perceptions towards the Institutional-Level TEF during its implementation in 2016 as well as the possible implications as the TEF proceeds to its final iteration at subject level. This is conducted in a manner which is capable of providing a

framework for an improved understanding of the forthcoming Institutional-Level TEF in 2020, which may be beneficial both senior managers and teaching practitioners.

1.2 The research gap

The identification of a research gap involves several important factors which include the use of scoping, the definition of parameters, an awareness of existing constructs and the identification of sub-themes (Stokes and Wall, 2014), (Saunders et al, 2012), (Wallace and Wray, 2011), (Tashakkori and Creswell, 2007). This point is developed by Petre and Rugg (2010) who suggest that it is important to identify an area which either makes an original contribution to knowledge, or develops an existing discourse. In this case, the research develops an existing discourse which represents a synthesis of management and new science, in order to provide a framework which improves greater understanding and management of an emerging educational policy. The research builds upon existing literature on the Institutional-Level TEF, business schools, policy development, complexity theories, and leadership influenced by new science. The researcher begins by exploring gaps in existing empirical literature on the Institutional-Level TEF in 2016. While this is limited due to the recent nature of its subject matter, it nevertheless provides sufficient material for exploring initial perceptions of this educational policy. Areas of change management have previously explored the impact of policies within universities. However, there has not been any focus on the relationship between business schools and their perception of the implementation of specific policies such as the Institutional-Level TEF in 2016. The exploratory nature of this research includes a senior lecturer's awareness of the existing complexity into which the Institutional-Level TEF in 2016 has emerged. This includes references to the way in which universities operate in a *punctuated* manner in contrast to private sector organisations, due to time factors, and the academic calendar, within what has been called *the efficiency of response* (Ntonia, et al, 2014). As a point of departure, Petre and Rugg (2010) argue that research should answer the following questions; Why is it worth asking? What are the significant findings? Why should anyone be interested? What are the implications for developing theory? What are the limitations to generalisation? These questions which have been considered when developing the following sections.

1.3 The research question, aim, and objectives

The research question, which has been considered for this study is:

“To what extent can the Teaching Excellence Framework (TEF) be identified as a Complex Adaptive System?”

The research question was developed from the author's interest in exploring business school perceptions of an emergent educational policy, which is capable of introducing complexity into the higher education sector. Moreover, the research seeks to explore the extent to which the TEF behaves in the manner of a Complex Adaptive Systems (CAS) in order to provide a framework for its improved management.

Aim: To explore business school responses towards the implementation of the Teaching Excellence Framework.

The aim of the research is to explore the response to the TEF from different business schools towards an significant educational policy, and to identify any similarities, differences, and areas of convergence. The following objectives are then used to explore the chosen topic in order to identify themes, and generate knowledge for use in professional practice.

Objectives:

Objective 1: To identify the presence of the TEF within business schools

Objective 2: To explore business school perceptions of the TEF

Objective 3: To establish business School responses towards the TEF

Objective 4: To develop a framework for the management of the TEF in 2020

1.4 Outline Methodology

In attempting to explore possible links between the TEF at Institutional-Level in 2016 and Complexity, Adaptive, Systems (CAS), the researcher has chosen an interpretivist methodology in order to establish the research question. An interpretivist approach focuses upon the way in which individuals conceptualise their interpretation of the world and attempt to make sense of it (Chauvel and Despres, 2002). Within the interpretivist philosophy, one of the most appropriate methods undertaken is through qualitative analysis. Moreover, Hannabus (1996) suggests that qualitative research is utilised within the social sciences in order to study the social world from the perspective of *the actor*. Therefore, the actors in this research are represented by thirty respondents from ten business schools across the country as they seek to make sense of their subjective experiences of policy implementation.

Jonas (2018) argues that qualitative research focuses on generating meaning and understanding through the use of rich description, while also providing a valuable method of understanding environments and the meaning that Individuals within those environments attached to their experience. Additionally, Cunliffe (2010) suggests that in the past forty years, interpretations of subjectivism have emerged as historically, socially, and or linguistically situated experiences. In this sense, qualitative research differs from quantitative research in

several distinct ways (Nardy,2018). Firstly, qualitative research focuses on the quality or meaning of experience and attempts to describe or understand the nature of lived human experience (Van Manen, 2016). In contrast, quantitative research focuses on quantity, frequency, and magnitude (Hasbrouk, 2018). Furthermore, qualitative research utilises approaches such as constructivism and interpretivism which search for subjective meaning, rather than accepting external an objective reality as the only explanation (Mead, 1966) cited (Granberg, 2018). Within this context, Fellows and Liu (2015) suggest that quantitative research, in contrast, utilises positivism, a view which suggests that social phenomenon is independent of the observer, while remaining stable over time and being objectively quantified. In terms of investigating goals, qualitative research seeks to understand, describe, and discover. Whereas, Ary et al (2018) propose that quantitative research seeks to predict, test hypotheses, and confirm. In terms of design, qualitative research represents a flexible, evolving, and emergent approach, while quantitative research remains structured and predetermined. Within qualitative research, the researcher is the primary instrument bringing their own perspective or meaning to the research area, while focussing on rigorous implementation in order to avoid what Toth, et, al (2017) describe as ambiguous qualitative analysis. In contrast, quantitative research relies upon external instruments such as tests and surveys in order to quantify a particular subject. Gerber and Wong (2016) argue that in its earliest stages, qualitative data seeks to explore the chosen topic in order to identify patterns, themes, and intuitive suppositions. In this sense, the researcher believes that description forms an essential aspect of qualitative research and that it is capable of providing detail and specificity in order to describe experiences as accurately as possible.

Through exploration, description and interpretation, a qualitative researcher may arrive at a complete understanding of a phenomenon, setting, or context (Berg and Lune, 2004). In contrast, qualitative approaches such as case studies, ethnography, phenomenology, and narrative approaches provide an opportunity to analyse subjective interpretations of reality at a personal level. Within qualitative research, there are several terms, which are used to express academic legitimacy. These include; trustworthiness (Maxwell, 2014), and validation (Creswell,2013). This point is previously discussed by Schwandt, et al (2007),who use of the term *trustworthiness* which includes; credibility, dependability, and confirmability. Furthermore, Lietz et al, (2006) include *prolonged engagement*, rich, thick description, triangulation, discrepant information, clarification of researcher bias, peer debriefing, and the use of an external auditor.

1.5 Proposed contribution to theory and practice.

This research contributes to a growing body of literature which discusses the emergence of Institutional-Level TEF and its possible impact upon higher education. It also explores the development of the Institutional-Level TEF in 2016 and the possible management of its implementation within existing administrative mechanisms. The researcher has chosen to draw upon the subjective interpretations of thirty respondents across ten universities in order to explore multiple perspectives upon business schools might respond to the implementation of the Institutional-level TEF in 2016. Within this sense, Cunliffe (2003) suggests that approaches such as *reflexivity* are capable of unsettling representation by proposing that meaning is constructed through a process of social construction during interactions with others. Therefore, the research explores the subjective perspectives generated by respondents within their academic networks when responding to the emergence of the Institutional-level TEF. Moreover, the research contributes to CAS theory by exploring the none-linear behaviour of an educational policy as it emerges into ten national universities. This process is conducted by utilising thematic analysis within cluster formations in order to identify patterns within the data. These are then compared to areas which relate to four specific CAS theories such as; emergence, adaption, signals and boundaries, and the edge of chaos. The data is then explored in relation to the four chosen CAS themes and thus provides new perspectives on the chosen topic. The researcher is aware that an exploration of perceptions towards policy implementation within universities, echoes previous research by Zimmermann (1999) which explores the management of health organisations through a lens of complexity theory and discusses the manner in which seemingly *simple* elements become *complicated*, and then *complex*. A similar model is used within the research to explore the emergence of the Institutional-Level TEF through a similar lens, while also seeking to identify the Institutional-Level TEF as a CAS. Moreover, the research seeks explore the extent to which the emergence of a policy is capable to generating *murmuration* within organisations, and therefore to further contribute towards the theory and practice of response within change management.

The value of such an approach is discussed by Palmberg (2009) who argues that CAS theory is capable of providing insights into the origins of quality assurance as an example of rational reductionism, where new forms of governance add further dimensions to previous models. The researcher also seeks to contribute to theory and practice by exploring factors which may have affected the response to the TEF. These includes the time limits within the preparation of policies, and time factors which limit responses due to the existing complexity within organisation structures such as high levels of bureaucracy, and the punctuated nature of academic the academic calendar. Therefore, the research contributes to theory and practice by utilising CAS theory in order to explore business school responses towards an educational

policy in order to provide a framework which is capable of providing an improved response to policy implementation during seemingly uncertain times.

1.6 Chapter Introductions

This thesis consists of eight distinct sections which provide a context for the subsequent empirical investigation, the findings of the primary research, and the final recommendations and conclusions. This introduction (**Chapter one**) provides a broad outline of the chosen topic and this includes the aforementioned structure to the thesis. This is followed by **Chapter two**, which introduces the research gap, research question, aim, and objectives. This is followed by an outline methodology and a proposed contribution of theory and practice. The topic of complexity theory is introduced and linked to the process of policy implementation. **Chapter three** reviews existing literature in three key areas which include the higher education landscape, the emergence of the TEF, and CAS theory as a lens for exploring organisational change. **Chapter four** discusses the reasons why an interpretive methodology has been chosen and the way in which a qualitative approach is capable of investigating the richness of meaning within the narratives of respondents. This chapter also provides a rationale for the adoption of an inductive approach in relation to the analysis of the research findings. The methodology also draws upon Cunliffe's three problematics of inter-subjectivism, subjectivism, and objectivism. **Chapter five**, discusses cluster analysis and its capacity to produce themes. These themes are explored within their cluster formations in NVivo from the narratives of thirty respondents, to explore the response from business schools towards the TEF, and identify the TEF as a Complex Adaptive System. **Chapter six**, outlines the processes, which have been undertaken in order to identify, recruit, and conduct the research from a sample of thirty respondents across ten universities. Moreover, this provides evidence of the time and effort which was spent in accessing the respondents and illustrates the breadth of the sample which includes pro-vice chancellors, deans of education, senior management, senior lecturers, lecturers, and senior administrators. **Chapter seven**, discusses the implications for utilising the knowledge generated by exploring the response to the TEF. This also includes the implications for using this knowledge to the purpose of effective management of the TEF in its subject specific form in 2020. **Chapter eight**, includes a discussion, recommendations and a conclusion which discusses the main points of the findings, how they might be explored further, and a final summation.

Chapter 2: Literature Review:

2.1 Introduction

A literature review provides the opportunity for a researcher to choose whether to make their investigation into a chosen topic selective, retrospective, comprehensive, part of a larger work or stand-alone (Stokes and Wall, 2014). Moreover, others such as (Saunders, et al 2012) suggest that literature reviews can also be exploratory (Saunders, et al 2012). In this case, the literature review combines an approach which is selective, retrospective, and exploratory. The first section of the literature review explores the higher education landscape, with reference to policy development, and its impact upon the sector. The influence of educational policies is explored with specific examples which discuss their *dialectical* nature and long term influence, as well as their capacity to influence organisational change. The second section refines the previous section by exploring the emergence of the Institutional-Level TEF. This includes its development through its green and white paper stages, consultations, and capacity to introduce complexity within existing bureaucratic mechanisms. The third section explores CAS theory and the manner in which it is capable of providing an alternative theoretical approach towards understanding organisational change.

2.2 Complex landscapes within Higher Education

Guri-Rosenblit et al (2007) suggest that complex landscapes have developed within higher education over several decades (appendix 1) and that any challenges within higher education represent a lack of interconnectedness with existing systems. Furthermore, Geert and Steenbeek (2016) suggest that the educational landscape consists of several organisational levels, involving political policy making and high levels of economic administration which organise national education systems effectively. Within this context, policy implementation frequently requires a multiplicity of adjustments which are capable of impacting upon the way employees are supervised, work, communicate, and relate to one another (Mathews and Linski, 2016). In recent years educational policies have produced a surge in student numbers and delivered an increasingly educated population while also generating income to counter balance the removal of government funding (Merrow, 2005). Moreover, others have suggested that the landscape of higher education is now inextricably linked to regional, national, international and global markets (Baroutis, 2016). From a critical perspective, concerns have been raised in relation to the manner in which higher education has become increasingly

defined as a commodity inside a market to be purchased by the State on behalf of students as customers (Beach, 2012). Furthermore, doubts have also been expressed by Lucas and Crowther, (2016) who argue that over-expansion has resulted in the disparagement of government policies and their encouragement of *massification*. This point is reflected by Gumport, et al (1997) who previously identified marketisation as a significant factor in lowering academic standards. However, Altbach (2009) considers marketisation as being essential for recruiting numbers and satisfying students as customers, while Carter and Curry (2011) suggest that the sector is constantly facing the challenge of balancing resource needs against political pressure.

An example of similar concerns may be seen in previous research which compares the manner in which successive German and Swedish Governments have attempted to *reduce* the emphasis on universities becoming production lines of human skills which exclusively serve the requirements of capitalism (Dreijmanis, 1977). Recent advances in organisational theory have challenged this deterministic view, and emphasise the importance of *active agency* over *embedded institutional factors* (Wang, et al 2015). This is a view which is also expressed by Robinson (2002) who suggests that micro-management and accountability are necessary in order to counter external influences such as inflation which have significantly increased the cost of operations for universities, while in contrast others such as Fenwick (2016) argues that performance indicators as conceptual technologies and explicitly political tools designed to shape perception and control staff behaviour. Taking all these elements into account, it is possible to agree Teixeira (2013) who suggests that the higher education landscape is affected by multifarious conflicting forces, and Narayanan and Fahey (2005) who suggest that researchers should turn their spotlight onto the laws governing competition within any chosen sector. Within the context of higher education, Tomlinson (2012) cited in Dillabough (2016) identifies marketisation, internationalisation and neo-liberalisation as significant factors affecting both policy making and the promotion of self-understanding within higher education, arguing that a *knowledge economy* and *skill sets* now frame a previously transformative landscape. Furthermore, from an economic perspective, others such as Hall and O'Shea (2013) cited in Lucas and Crowther (2016) consider neo-liberalism as the representation of a significant shift from Keynesian to Monetarist economics which promotes unregulated markets, reductions in government expenditure, privatisation of public ownership and the enhancement of the private sector. In this sense, Olssen and Peters (2005) argue that Neo-liberalism is a particular element of globalisation which constitutes a form through which domestic and global economic relations are structured and this is evident when examining the influence of Neo-liberalism upon higher education.

2.3 Influence of Neo-liberalism

Olssen and Peters (2005) identify significant differences between the discourse of liberalism and neoliberalism. This point is also discussed by Burton-Jones (1999) who suggests that knowledge as a commodity has become an important form of global capital or *knowledge capitalism*. Moreover, Gerard (2015) suggests that Neo-liberalism continues to exhibit a strong belief in markets, competitiveness and privatisation as a direct outcome of complex social and historical events and processes. This point is also developed by Morrissey (2015) who explores the management of restrictive and expansive policies in relation to Upper Secondary Education (USE) across England, Scotland, Wales and Northern Ireland. This identifies the impact of implementing policies across several national boundaries and the challenge of establishing consistency across several platforms. Furthermore, Bastalich (2010) cited in Morrissey (2015) warns against allowing economic logic to supersede educational concerns, while Merrow (2005) criticises Neo-liberalism's increasing impact upon higher education through a duality of increased commodification and the lowering of educational standards in order to maintain competitiveness. Within this context, the Minister for Education and Science in 2016, Jo Johnson has expressed concern over a 300% rise in degree awards, and suggests that this is a situation which the forthcoming TEF will seek to address (Hansard, 2016). Neoliberalism is a particular element of globalisation which constitutes a form through which domestic and global economic relations are structured (Olssen and Peters, 2005). Furthermore, neo-liberalism has a strong belief in markets, competitiveness and privatisation as a direct outcome of complex social and historical events and processes (Gerard, 2015). However, this position is questioned by Stronge (2018) who celebrates the special teaching behaviours which contribute to student achievement. Moreover, parallels may also be drawn when considering the relationship between national and international universities and their relationship to funding bodies, which habitually include political agendas.

Governments continue to draw upon academic research while developing their policies, and research universities continue to be seen as the pinnacle of the academic system while maintaining the highest prestige. Furthermore, research universities produce knowledge, offer advanced academic degrees, and employ the highest-qualified professors (Salmi, 2009, cited in Altbach et al, 2013). Within this context, the Higher Education Authority (HEA) maintains a prominent position in providing an important platform for Vice Chancellors, Pro-Vice Chancellors, and senior figures in higher education to express their views. This is evident from the initial reaction from the HEA towards the TEF green paper and the proposed mechanism TEF - views which report alarm, incredulity, and caution. Moreover, it may be suggested that such a policies simply reinforce the dominant practices of accountability, rather

than interrogate and contest policies and practices associated with school performance (Baroutis, 2016). Within this context Marginson (2006) suggests that alongside the maximisation of status, universities now feel the pressure to maximise their fees. Moreover, the change in organisational priorities is identified as a process which has transformed universities from public institutions into leading players in a new international market for student *load*. This echoes previous research by Clarke (1983) who suggests that higher education policies consists of a triangle of three forces which include academic guild, state, and the market. Within this context, Taylor (2006) has identified a new form of management emerging within the higher education sector after the passing of the Further and Higher Education Act in 1992. This promoted thirty five former polytechnics to university status and brought to an end an existing binary policy for higher education in the UK. Moreover, Brown and Eisenhardt (1997) suggest that universities exhibit semi-structures, links in time, and sequenced steps, which contribute to a sense of continuous change. One example of this is Kirby-Harris (2003) who analyses the impact of educational policies at the University of Namibia over an eight year period and identifies a significant shift towards institutional management, government, and market competition. This is evident when considering competition between business schools and their reliance upon student fees due to government policies which are designed to reduce state dependency.

2.4 Competition between Business Schools

The previous section explored the manner in which Neo-liberalism has the capacity to create competition between organisations. One example of this is the competition which has developed between some of the most lucrative faculties in universities - their business schools. From a historical perspective, four nations are credited with promoting the development of business school culture within universities. and these include France, Germany, Britain, and America (Rayment and Smith, 2013). Although the concept of the autonomous business schools is often credited to institutions such as Harvard, others suggest that it is important to remember that the development of business and management knowledge originally began in Europe (Antunes and Thomas, 2007). Moreover, the evolution of business schools within several European cities in the late 1800's and the rise of interest in business studies in the 1900's, is seen as an example of emergent globalisation and policies such as the Bologna process (Witt, 2006) which encouraged the development of a market for internationally recognisable qualifications. The researcher considers that this provides an example of educational policies which promote an internationally competitive dynamic. While acknowledging the successful role of business schools have played within higher education during within the in past four decades, critics of business schools have also questioned their value, purpose, role and stature (Thomas, 2009). This theme is developed by Mintzberg and

Gosling (2002) who argue that contemporary business education focuses on the functions of business more than the practice of management. Furthermore, (Krell, 2007) suggests that an increase in marketisation has also led to *massification* within the sector with large numbers of students receiving similar qualifications each year, from business schools operating within a competitive and unstable environment which is characterised by unremitting change. Huxley et, al (2018) also express noticeable concern in relation to the impact of excessively large class sizes upon the quality of the teaching provision. These points illustrate the extent to which competitive neo-liberal policies are capable of increasing, or decreasing the size of the higher education market.

Lorange and Thomas (2016) argue that this environment is also influenced by increased levels of competition from non-accredited schools and the continued commodification of business education within a global market. This point is explored by Pfeffer and Fong (2002) who consider that the phenomenon of business schools may have run its course, and that they are seen as exhibiting minimal impact in two key areas - research and student employability. However, Lunt, et al (2018) suggests that business schools should develop a culture of engagement which advances their educational mission, through the involvement of students, faculty, alumni, employers and administrators. The most recognisable business school in the world remains Harvard, in the United States. However, in recent years there has been a significant shift in this dominant position due to the emergence of competing business schools such as INSEAD in Fontainebleau, the London Business School and several institutions in China. Moreover, competition between business schools has increased due to the challenge of preparing students for a world of work which has been transformed technology, demographics and fast moving markets (Krell, 2007). In contrast, others such as Behrman and Levin (2009) criticise business schools for placing excessive emphasis on quantitative analysis in relation to data gathering, manipulation of information, , rather than problem identification, goal determination, and implementation. Furthermore, business schools find themselves balancing resource needs against potential political pressure (Carter and Curry, 2011), while competing for students within discourses which seek to structure a sense of reality and notion of identity, which are not fixed, but constantly being made and remade (Mifsud, 2016). One example of this is the Institutional level TEF 2016, which seeks to re-define teaching, while imposing a new reality upon the higher education sector by increasing competition from the private sector.

2.5 Competition from the private sector

In their study of one hundred and eighty one Portuguese public and private higher education institutions from 1995 to 2007, Teixeira et al (2013) argue that successful competition between the sectors is based on their legal status. In specific terms, they also identify additional

contributing variables such as the size of institution, location, scope of research activity, and institutional mission. They also suggest that the private sector is quicker to respond to competition within markets than the public sector and is therefore capable of offering programme diversity at a lower price. From a business management perspective, Drucker (1997) argues that the internet's capacity to generate knowledge is capable of *annihilating* universities as walled institutions within thirty years. Additionally, Guri-Rosenblit et al (2007) express concerns at the negative aspects of private provision in many countries which act as unregulated *degree mills* offering low standards of education at a low cost. Lucas and Crowther, (2016) develop this theme by suggesting that cost reduction through competition reflects government policies which focus on deregulation and reduction in expenditure. Furthermore, this shift towards increased commodification within the higher education sector has alarmed researchers such as Merrow (2005), who criticise what they see as a declining degree system which has lowered its standards in order to maintain its market share. While others such as McGuffey and Robinson (2017) criticise the extent to which decentralisation, managerialism and accountability have resulted in the loss of professional expertise. Within this context, the Institutional - Level TEF has been criticised for introducing negative changes, while others have seen the policy as an opportunity to innovate and succeed. The Institutional - Level TEF includes ambitious plans to elevate teaching to the level of research, widen participation, provide better value for money, and in the long term develop an accreditation system which is capable of being developed into an International benchmark. However, others suggest that measuring the impact of policies is difficult, due to unexpected influences such as a financial crisis or a changes in government (Pastor and Veronesi, 2012). The researcher considers that the higher education sector currently faces several significant challenges. These include a large scale expansion of the sector, a significant rise in student fees, emergence of a customer paradigm, reduction in international students and the threat of competition from the private sector.

Private-sector providers are capable of offering several distinct options through the delivery of internet-based education training. This includes vending hardware, software, developing systems, employee training and education partnerships with degree-granting institutions (Schwier,2012). The increased levels of competition between the public and private sector have produced a substantial body of research. However, from a historic perspective it may be suggested that alternative providers within the higher education sector are nothing new. For example, Wang (1975) refers to the *unbundling of higher education* in reference to the founding of the Open University in 1969 as the first public distance learning and research led university, which utilised technologies such as television and radio in addition to summer schools and centres containing tutors. It is interesting to note that a similar term is used in the literature of business analysts Forbes when Beyer, cited in Doss (2014) when discussing the

unbundling of the humanities and the way in which the humanities might be taught on-line at a fraction of the current cost. This suggests that private sector interest in what is considered to be one of the more accessible aspects of public sector education is nothing new. Therefore from a managerial perspective within the university sector, it is worth noting that the TEF has the capacity to promote greater levels of access to the private sector. This illustrates that the private sector has the capacity to create a long-term deflationary trend within the higher education sector through the delivery of a more competitive offer. Moreover, this is an example of how educational policies are capable of encouraging the development of a knowledge economy as well as competition on a national and International scale.

2.6 Competition from International markets

Kusumastuti et al (2018) suggest that competitive advantage is related to the attributes which an organisation chooses in order to outperform its competitors. However, they caution that being large and successful is no guarantee of an organisation's continued survival. Furthermore, Yang and Gabrielsson (2017) argue that a proactive approach to the creation of opportunities should include innovative approaches. Internationalisation models are complex and multifarious, and require regular adjustment in order to respond to changes in market requirements effectively. Institutions have developed Internationalisation strategies over time, and this has occurred due to legislative changes within the United Kingdom. These challenges have further been compounded by increased marketisation, a significant rise in tuition fees, and a restriction on International student visas (Hubble and Bolton, 2018). This highlights the impact of policies upon international student numbers, and the manner in which policies are capable of increasing markets or restricting them. This provides an example of a response to the massification of a market, which can be managed through the implementation of restrictive policies (Tannock, 2018). In terms of internationalisation, it may be suggested that the area of Higher Education which has been most affected by the changes in legislation are the Post-96' of universities due to the fact that many are not research based.

The response to such restrictive challenges has been the develop of strategies which promote increased interconnectivity between comparative institutions. This may be compared to earlier examples from Germany and Sweden, where attempts were made by successive governments to reduce the emphasis on universities as a production line for the needs of capitalism. (Dreijmanis,1977). In Britain, International students contribute 10–30% of most universities' total income (Universities UK, 2014) and approximately £12.5 billion per year to the UK national economy (British Council, 2008) (cited by Gu, 2011). Furthermore, it may be suggested that an increasingly competitive and commercialised higher education sector has led to the internationalisation of Higher Education Institutions (HEIs) around the world

(Bakar, 2013). Research into this subject area has developed contradictory theories which both encourage and question the representative rationales. It has been suggested that internationalisation of curriculum can only take place when an increase in the teaching of internationalisation at a curriculum level occurs. This has been highlighted as a significant area where the efforts of universities and individual departments might need to increase (Salehi-Sangari and Foster, 1999). Moreover, Robson, (2011) argues that forward thinking universities are responding to competition by developing their curriculums to become more relevant to international students, while also considering the impact of internationalisation upon home students. In this sense, Internationalisation is defined as the variety of policies and programs that universities and governments implement in order to respond to global competition. This includes sending students to study abroad, setting up a branch campus overseas, or engaging in some form of inter-institutional partnerships (Altbach et al, 2013). Moreover, Salmi and Saroyan (2007) identify the importance of policies that promote ranking systems in the absence of global quality assurance as regulators for International students. In contrast, others have argued that there is also competition from the East Asian/Pacific university model which is based on an extensive-hours working culture, high family expectations, social conformity and adherence to a didactic pedagogy (Sahlberg 2011). This illustrates that governments have the power to implement educational policies which can increase, or restrict, educational markets or move them to a position of international standardisation. Two examples of this are the REF which seeks to standardise research across universities and the Institutional- Level TEF which seeks to standardise the quality of teaching.

2.7 Manifestation of the Teaching Excellence Framework

The institutional level TEF (2016) represents a government initiative which seeks to elevate teaching to the level of research within higher education. It contains numerous interconnecting elements which are capable of generating complexity across several platforms and, in a wider sense, influence the direction of universities within the public sector. The purpose of the TEF is defined by Jo Johnson Minister for Education and Science who states that it exists to “drive up the quality of teaching in universities and to ensure that students and taxpayers get value for money and employers get graduates with the skills they need” (Hansard, 2016). Furthermore, the TEF represents a new level of competition within Higher Education - one in which smaller institutions will be allowed to acquire university status without a student quota, and the private sector will be allowed to increase its market share. There are parallels here with complex *adaptive* systems, which are made up of heterogeneous elements which *interrelate* with each other and with their surroundings, and are unlimited in their capacity to adapt their behaviour through experience (Dooley et al, 2003). Moreover,

adaptability may be seen as a system's capacity to adjust to changes within an environment without endangering its essential organizational features. According to Chiva, Grandío and Alegre (2010) cited in Chiva (2014) complex adaptive systems are characterized and fostered by improvement, concentration and discussion. This provides another parallel with the TEF, which includes all the aforementioned elements as it continues to evolve. Within this context, Capano (2009) cited in (Kauko, 2014) argue that complexity represents an epistemological choice, which presupposes an unpredictable event progression with irreversible changes, which are influenced by a chaotic paradigm. This highlights the idea that ideas have a life of their own and therefore require thoughtful policy development.

Kerwin and Furlong (2018) argue that there is often intense political activity surrounding any regulatory process, and that policies reflect ideological positions within a specific moment in time. Cairney,(2013) suggests that this occurs when different groups attempt to maintain a privileged position through minimizing attention to policy solutions which will not benefit them, while other groups expand attention in order to encourage participation, debate and action. Understanding the impact that government policies are capable of having upon different eras is possible when comparing educational legislation over time. One example of this occurs when equating the Robbins report (1963) Crosland's Woolwich Polytechnic speech (1965), the Further and Higher Education Act (1992) and the Teaching Excellence Framework (TEF) (2015). From a historical perspective, the Robbins report (conservative) suggests an expansion of the higher education sector and provides 178 recommendations. In contrast, Crosland's Woolwich Polytechnic (labour) speech suggests that caution should be exercised in regards to sector expansion and that no ascensions to university status should occur for approximately 10 years (Crosland, 1965). Following this the Further and Higher Education Act (1992) invites thirty five former polytechnics to join the sector with university status, while the Teaching Excellence Framework (2017) seeks to improve the standard of teaching, while also intensifying competition. Within this context, the TEF white paper has received criticism from Vice Chancellors and Senior Managers who reside in both Russell Groups and Post 92' universities, who remain concerned at the political haste with which this educational policy has been developed. Moreover, Meadows (1999) suggests that policies change over time as they become extended by *strategic leverage* upon specific points. This point has been previously discussed by Humphrey (2001), who calls for increased consultation prior to implementation in order to reduce the opportunity for policies to become lost within a the complexity of self-created bureaucracy.

2.8 TEF Green and White paper

The TEF Green Paper "Fulfilling Our Potential: Teaching Excellence, Social Mobility and Student Choice"(2015) may be seen as the document which has introduced the TEF. Following

its publication a consultation period produced comments from Vice Chancellors in regards to developing the policy. While promoting an industry sensitive agenda, the Green Paper is determined in its approach and proposes accelerating existing processes to increase competition within the market (Hubble, et al, 2016). The White Paper suggests that degree awarding powers should be made available to institutions at their inception - thus potentially offering large corporations a chance to enter the English higher education sector. Moreover, this point is discussed by Goldin and Katz (2018) who identify a race between education and technology. The TEF white paper was published in May 2016 and drew, in part, upon feedback from Vice Chancellors, and Pro-Vice Chancellors as well as setting out to reform market entry into the sector in England, and significantly change the infrastructure and research funding landscape. The TEF has also drawn criticism Ashwin (2017) who argues that there is little evidence of an valid metric which can measure teaching quality and that the metrics do not include important elements such as the expertise of those who teach. Although the TEF continues to be a priority, the White Paper places an increased emphasis on market reform and calls for flexible responses from an established university sector in order to deliver higher education within a competitive market. The White Paper introduces the idea of creating an Office for Students (OfS). Furthermore, the OfS could in practice look similar to Higher Education Funding Council for England (HEFCE) with proposed responsibilities such as sustainability, efficiency and health of the Higher Education sector.

The White Paper also sees the creation of another new body for United Kingdom Research and Innovation (UKRI), which will draw together seven research councils (Innovate, UK), and HEFCE's quality-related funding under a single strategic umbrella). In this sense, the TEF represents significant Organizational change, which can be defined as alterations of existing work routines and strategies that affect a whole organization (Herold and Fedor, 2008). This represents a process aimed at enhancing an organization's innovative capability and thus improving efficiency by introducing new technology, altering strategies, recalibrating workflows, or by considering mergers and restructuring or re-shaping (Feng et al, 2016). Furthermore, others have suggested that an absence of metrics and discussions regarding the future of international students within the policy has meant that international students have been "TEF-ed out" (Hayes, 2016). Furthermore, others such as Ashwin (2016) suggest that the ways in which quality is measured significantly effects the way it is defined and that there is no mechanism outlined in the TEF. This suggests the development of a new metric approach across the sector. One area of interest centres on the topic of *teaching intensity* which has been criticised for pandering to an over-supportive approach which undermines opportunities for cognitive development through autonomous learning and problem solving. This point is discussed by Schunk, and Zimmerman (2012) who suggest that there is no significant correlation between the hours that students are taught and the quality of knowledge which is

gained. This also include possible influences such as class size, room size, room location, time of day, cohort level (first year, second year, third year) which all represent *intangible* aspects (Kawalkar and Vijapurkar, 2015). Criticism of university rankings and university league tables continues to centre on the emphasis which is placed upon the history and prestige (Fyfe, 2017), with the most vocal responses to the Green and White paper emanating from the Russell Group of universities.

2.9 Response to the Green and White paper

Responses to the TEF Green Paper have been expressed by senior academics such as Dianne Willcocks, Emeritus Professor at York St John University and co-assessor for the HEA's Vice-Chancellors' Strategic Excellence Initiative (VCSEI) who has contributed to the debate with particular reference to several key areas. Within this context, it is stated that "the history of higher education contains numerous examples of attempts to assess excellence and to improve the standard of teaching" (Willcocks, 2016). This point suggests that the TEF is not the first (or the last) attempt to manage, measure, and commodify the phenomenon of teaching. Furthermore, the opportunity created by the Higher Education Authority (HEA) in its Vice-Chancellors' Strategic Excellence Initiative (VCSEI) is applauded for providing Vice-Chancellors from both Russell Group and Post 92 universities with the chance opportunity to express their reaction to the initial stages of the proposed TEF framework from the highest organisational perspectives. This stature is reflected in the world university rankings. It is also suggested that the VCSEI initiative has already drawn upon qualitative and quantitative data in order to improve the standard of teaching at an organisational level and questions the relevance of the TEF in adding anything but unnecessary complexity to the equation. This perspective provides a suggestion that teaching excellence has already been a subject of interest within higher education for many years and that organisations such as the HEA have already undertaken this task before the TEF was even considered. This underlies the point that the necessity for the TEF remains questionable according to many commentators. Furthermore, others have expressed their misgivings regarding the TEF White Paper and focussed on three core areas being proposed to evaluate teaching excellence. These are described as three "laudable foci" (May, 2016) - which inaccurately focus on teaching quality, the learning environment and student outcomes/learning gain. These three areas are criticised for their questionable ability to assess teaching quality to any great extent and the criticism also includes providing alternatives from existing schemes which offer similar if not improved opportunities for teaching assessment - with the National Teaching Fellowships to Staffs (NTFS) and the University of Sydney Index for Scholarship in Teaching (IST) being suggested as credible alternatives. This underlines the fact that the leaders within higher education, including VC's, PVC's, professors, and senior managers continue to express a consolidated

uneasiness in regard to the government's choice of metrics and the inaccurate restructuring of the higher education architecture which may result due to inaccurate data.

This illustrates significant level of criticism from the sector towards the white paper, while offering alternatives. Furthermore, Bolden (2016) recognises that educational leadership and teacher quality are major correlates of student engagement and high quality learning, while also suggesting that metrics which takes into account subject orientation might produce less generic sets of data. It may be suggested that a major criticism of the TEF remains the fact that practitioners within higher education are finding the metric choice to be basic, unimaginative and incapable of producing accurate data. Evidence of a planned strategic reaction to the TEF by the NUS is apparent in their statement "We know that if students, en masse, either refuse to fill in the surveys at all or sabotage it by giving artificially maximum or minimum scores, the results would become of little use and would wreck plans for the TEF," (NUS,2016). This point has particular relevance when considering the urgency with which the Higher Education and Research Bill 2016-17 has been created in order to lessen the government's management of the sector and the introduction of higher levels of competition through policy implementation.

2.10 Implementation of the TEF

Marginson (2013) argues that policy development is *iterative* and *reproductive* on the basis of the dominant ideas which become institutionalised over time. Furthermore, from the policy maker's perspective the formulation process includes an attempt to assess as many possible impacts as possible (Gibson, and Birkinshaw, 2004). This approach is significantly influenced by the parameters which are chosen to control operational dimensions which attempt to regulate sectors across different regions, where the degree of *interactivity* determines the levels of complexity (Ngu and Phan,2015). This point is also explored from a national perspective by Hodgeson and Spours (2016) within the context of upper secondary education (USE) across England, Scotland, Wales and Northern Ireland in order to illustrate the ability of policies to *restrict* or *expand* competition across a sector which transcends several borders. In this respect, policies are often connected to, or develop from, previous agendas which require a process of adjustment in order to meet the requirements of any acting government. This is evident when examining the extent to which decentralisation is capable to damaging links developed through nurturing relationships with schools, teachers and teaching practices (Robinson, 2002) a point which has previously been discussed by Lasswell (1951) in his analysis of agenda setting, which includes a call for increased awareness of the rationales behind government decisions, policy formation, their implementation, and evaluation. Moreover, it is suggested that this may be achieved through the use of *policy cycles* which are designed to reduce *dissonance* through the practice of reciprocal feedback between the policy

developer and the policy recipient (Barrett, 2004). Furthermore, others such as Freeman (2013) have highlighted the capability of policy cycles to provide structure to situations which might otherwise become formless - an observation which is also previously stated by Bridgman and Davis (2004) whose research into policy cycles suggests their necessity due to the danger of uncoordinated institutional policy propagation and *autocatalytic* reactions. This reflects the fact that policies are capable of creating feedback loops which can then be influenced by other policy units (Maggetti and Gilardi, 2016). In this sense policy cycles represent essential mechanisms which assist governments to reduce premature legislation which appears to be rushed in order to satisfy political agendas (Byrne, 2018).

In response, it is suggested that more analysis is required during the early stages of policy development especially when time is limited due to organisational timetables or when issues are politically charged (Howard, 2005). The HEA (2014) states that the Research Excellence Framework (REF) in relation to the four funding councils, led by HEFCE, aims to provide indicators of research excellence quality. As a government policy which precedes the TEF, the REF is designed to improve the quality of research within national universities through published results. These results are based on studies which explore the impact of research within the universities in the years 2008 - 2013, in order to measure the influence of that research beyond its traditional boundaries (Smith et al, 2011). In this sense, the term *impact* is significant and may be linked to previous aspirations for research to develop a wider scope which exceeds academia in order to embrace society and embrace potential future employers. One example of this is the Lisbon European Council (2000) which seeks to develop a competitive and dynamic world economy within which knowledge represents a positive force capable of delivering sustainable economic growth, jobs and an increase in social cohesion (Ovseiko, et al 2012). Furthermore, Martin, (2011) suggests that the ambitions of funding bodies seek to develop a dynamic and internationally competitive research sector which significantly contributes to economic prosperity, national wellbeing and the expansion and dissemination of knowledge.

2.11 Ontological anxiety

Milivojevic (2017) suggests that micro-management and accountability are necessary in order to counter external influences such as inflation which have significantly increased the cost of operations for universities. In contrast, others such as Fenwick (2016) identify performance indicators as conceptual technologies and explicitly political tools designed to shape perception and control staff behaviour. Taking these elements into account, it is possible to agree with the point made by Teixeira (2013) that the higher education landscape is affected by multifarious conflicting forces at any one time. Furthermore, Narayanan and Fahey (2005) suggest that researchers should turn their spotlight onto the laws governing competition

within any chosen sector. The effects of competitive forces upon educators within universities is evident by the emergence of *dignity officers* across faculties, increased staff attendance at counselling services, and an increase in stress related illnesses amongst staff (UCU, 2015). At the centre of the debate between commodification and the development of critical autonomy, is a discussion regarding the value of knowledge (Lyotard, 1984). From an epistemological perspective, the internet is now seen as an existential threat to the dominance of universities as producers and disseminators of knowledge. In business management terms, this places the internet in the position of being a *threatening new entrant* (Siaw and Yu, 2004) and an example of the competition for *value capture* amongst a knowledge intense industry (Sheehan, 2005). Furthermore, the debate surrounding the meaning of knowledge in the twenty first century continues to revolve around the extent to which higher education is directed through policies which promote a consumptive model rather than pursuing the development of individuality and enquiry (Evans, 1997). Within this context Akerlind (2005) argues that education has traditionally followed the *phenomenographic* practice of developing an awareness of the meanings, or range of meanings, and that learning should contain a sense of *intentionality* for students as they approach their studies. This point is developed by Hodgeson and Spours (2016) who argue that the commodification of knowledge has produced a state of *ontological anxiety* amongst university lecturers who feel that perpetual surveillance and micromanagement has rendered authentic pedagogy almost redundant.

In this sense, ontological anxiety is seen as a psychological phenomenon which occurs when the distinction between the realities of teaching are at odds with an imposed ideology and changing governance modes (Frolich and Chrisensen, 2018). Moreover, Littlejohn and Hood (2018) suggest that this has contributed to a crisis of professional identity, and increased the levels of vulnerability amongst the profession, while (Williams, 2016) remains concerned about academic freedom of expression within an era of perceived conformity. In this sense it may be suggested that neoliberalism has created a cognitive dissonance between commodification and the craft of teaching as a noble tradition in which contains *non-obvious* or paradoxical aspects of behaviour (Brehm and Cohen, 1962). Concerns regarding ontological anxiety continue to revolve around the impact of open access to knowledge through global search engines. In this respect, search engines such as Google have become symbols of emerging competition to traditional academic libraries (Bell, 2004) cited in Brophy and Bawden (2005) in a post-modern era which predicted that the centre would not hold (Berman, 1983). The development of a narrative which discusses the emergence of search engines in the 1980's may be attributed to Project Zero at Harvard Business School which since its formation has drawn upon disciplines such as philosophy, cognitive psychology, education, the arts, and sciences (Perkins, 2018). This multidisciplinary approach may also be compared to the work

of the Santa Fe institute in the 1980's, which represents a combination of several disciplines which study the behaviour of complex adaptive systems.

2.12 Complex Adaptive Systems

The study of CAS theory provides insights from several seemingly abstract fields of study which have been developed by a group of acknowledged American scientists and academics into a purposefully interconnecting multimodal discipline (Appendix 2) and within that the BACH group, Burkes, Axelrod, Cohen, and Holland (Appendix 3). Stańczyk-Hugiet et al (2017) suggest that the mechanics of complexity requires expansive research in order to identify and analyse constituent parts, mutual interactions and relationships within systems. Within this context Complex adaptive systems (CAS) represents an emerging post-Newtonian paradigm (Anshu et al, 2016) and a reaction towards existing theories such as linear systems theory (Isidori, 2017). According to Holland (2012), CAS represent dynamic networks that have several agents (for example cells, neurons, or individuals) which act in coordination (neural networks, groups, and teams), and continually act in response to other agents and their environment. (Cantley, 2015). In this sense, control within complex adaptive systems is highly dispersed and decentralized and any coherent behaviour amongst agents arises from cooperation, collaboration, and/or competition. Therefore, the overall behaviour of the CAS is the result of a large number of decisions made every moment by many individual *agents* (Waldrop, 1992). These ideas are further discussed by Morowitz (2002) when describing Waldrop's publication on complexity which involves a description of John H. Holland and Arthur Samuel attending a computer simulation of flocking birds, which led to the development of the term *boids* and identifies objects which remain an equal distance from each other, with matching velocity, moving towards a proximal mass. Furthermore, CAS represent dynamic networks that have several agents (for example cells, neurons, or individuals) which act in coordination (neural networks, groups, and teams), and continually act in response to other agents and the environment (Holland, 2012).

Importantly, control within complex adaptive systems is seen as being highly *dispersed* and *decentralized* with any coherent behaviour amongst agents arising from cooperation, collaboration, and/or competition. Aritua et al, (2009) suggest that contemporary research has sought to examine previously unexplored non-linear activity within such areas such as social political, ecological and organisational phenomena. This includes the idea that a CAS is best understood by the niches it creates (Holland, 2012). Therefore, it may be suggested that CAS is suited to providing a theoretical lens for such research as it maintains an interest in situations where there appears to be no equation, or rule, which controls any particular system and little or no evidence of central control (Dougherty, 2016). However, while Hoban (2002)

finds CAS theory compelling and systemic, based on the notion that nothing stands alone and everything is interconnected, Biesta, (2011) is only willing to accept CAS theory as an interesting set of ideas and scholarship, but finds difficulty in accepting CAS as a new paradigm. This point may not take into account that CAS has developed from other scientific theories such as, Systems Theory (ST) which focussed on research into non-linear systems, while being influenced by the study of chaotic physical and chemical processes and mathematical equations (Choi, et al, 2001), and Network theory (NT) which explores networks and social capital (Lin, 2002), as well as much earlier work by Turing (1952) who suggests that substances which function homogenously are capable of having their equilibrium influenced by random disturbances, in a process described as *morphogenesis* which causes changes in shape. This illustrates some of the scientific theories which have contributed to the development of CAS, and an understanding of complex systems behaving in terms of their changeability, inter-connectivity, and flow (Van der Ploeg, et al, 2017). Moreover, emerging areas of study now focus on the relationship between complexity and its potential impact upon organisations.

2.13 Complexity within organisations.

Stacy, et al (2002) suggest that organisations should become more involved with the management of complexity in a manner which reflects Lorenz (1963) who discusses the managerial response to *avalanches* which contain a mixture of spatially-distinct but temporally-overlapping cascading events and dynamical disorder or noise. Within this context, Glinka and Hensel (2017) discuss such a situation while attempting to develop a sense of *involvedness*, through research which explores the behaviour of four hundred Polish public sector administrators as they respond to the emerging complexity of democracy within a post-communist era. Furthermore, similar research by Malik and Garg (2017) examines the responses to complex environments from five hundred and ten employees working within information technology companies based in India, in order to develop a framework which supports organisational practices, interventions, and resilience. Moreover, Paro et al (2017) have sought to discover if organisational practices from industry are transferable to other sectors? This is explored through analysis of the *Toyota Way*, which utilises micro-management. The results from interviews with fifty one Brazilian senior managers concludes that lean practices remain hierarchical, with formal procedures governing the behaviour of staff in a manner, which does not allow for *innovation* or *self-regulation*. Furthermore, Schultz et al (2017) explore the challenges facing groups within Swedish organisations who are charged with implementing government policies which may not be completed for fifteen years. In order to do so, they compare the motivation levels of two groups - one which participates in training session and one which does not. The results identify that it is possible

to have two different *group climates* within the same organisation, and that the *participant* group's climate exhibits a positive approach towards innovation, whereas a *non-participant* group's climate indicates a task orientation which does not express the same levels of readiness. This research framework is then used to inform managers to pay close attention to *group climate* and to apply more consideration to the composition of their teams.

It may be suggested that CAS exist in many forms and these include the human immune systems, eco-system, financial systems, and organisations (Cirella et al, 2014). Within this context, CAS corresponds to three distinctive activities which in themselves represent significant areas of interest (Levin, 2003). Firstly, the systems are complex and consist of many working elements which are connected in some way. Secondly, they are adaptive and constantly changing and evolving over time, and thirdly, they are systems which operate over a range of scales. Moreover, it may be suggested that there are other similarities within complex adaptive systems. These include evidence of highly connected non-linear activity (Majchrzak et al, 2012), which makes predictive outcome management difficult, contagion, and the risk of elements within the system causing rapid change. Furthermore, Dooley (1997) suggests that CAS exhibit modularity, which refers to parts of the system which is more connected *within* rather than *between* existing systems. Within this context, CAS provides a compelling analytical lens which contains several elements such as emerging complexity, multiple system levels, and non-linear activity (Lewin, 1999) cited in (Kershner and McQuillan, 2016). Moreover, from a CAS perspective, complexity represents the potential for *emergence* within unpredictable phenomena within organisations such as universities (Doyle, and Brady, 2018). Individual systems are seen as consisting of several agents acting in parallel, while *agents* exist within any environment which is produced by interactions with other *agents* within a system (Beer, 1995). The interaction of individual agents produces a new or *novel* pattern of behaviour (Cameron and Larsen-Freeman, 2007) which cannot be predicted through an understanding of any specific agent. This idea is expressed in the way in which global economic systems are constantly changing as a result of millions of micro-decisions produced by individuals. Moreover, Grover and Pea (2018) consider the use of computer modelling to examine a competitive environment in which multiple agents are involved in interactive behaviour and the manner in which they adapt to change.

2.14 Emergence and Adaption

Within the context of CAS, complexity represents the potential for *emergence* within unpredictable phenomena. Individual systems are seen as consisting of several agents acting in parallel. In this sense, emerging high-level phenomena are not explicitly built into a system and require a pathfinder approach in order to identify their possible impact (Fleming and

Marx 2006). Moreover, the interaction of individual agents produces a new or *novel* pattern of behaviour which is not predicted by understanding each specific agent (Wolf, 2014). This idea may be expressed in the way that the world economy is constantly changing as a result of millions of micro-decisions produced by individuals. Therefore, CAS theory suggests that emergence represents coherent behaviour within any system that arises from competition amongst its participating agents. This point highlights parallels between CAS theory and the behaviour of agents within project teams. Furthermore Kauffman (2010) uses computer simulations of CAS in order to demonstrate the possibility of the emergence of new survival strategies through a process of self-organisation. Moreover, Folke (2006) utilises a similar approach when using emergence and adaption to explore non-linear dynamics and their capacity to produce periods of rapid change in the environment, while exploring non-linear dynamics and their interactions across temporal spaces. Within this context, Defoort (2015) suggests that within non-linear multi agent systems order develops from feedback interactions between agents, with each agent carrying out their own activity without a central form of control. One example which is used to illustrate this within CAS theory is the behaviour of flocking birds where there appears to be no leader and only a few simple rules such as the distance between each bird which creates non-linear flying patterns or murmuration (Richardson and Chemero, 2014). Furthermore, others such as Xia et al (2017), utilise emergence and adaption theories in order to explore evolutionary pathways within botanical science. In contrast, other approaches such as Holism, represent the view that systems cannot be determined or explained by their constituent quantities, but rather through a deeper understanding of their underlying mechanisms (Bechtel, 2016). Moreover, adaption may be seen as a process which involves improvement performance over time, and may occur in several different ways including through a single event or due to a longer process of evolution (Holland, 1992).

Learning is a significant factor within the evolutionary process of adaption. In this respect (Yang, 2017) argues that it is important to be aware of the historical background of any emergent phenomena and the narrow conceptions it may have produced in terms of path dependence. The historical context of a system is a significant aspect of understanding emergent activity as narrow conception includes a reinforcing effect in which adoptions cannot be easily undone (Fleming et al, 2007). Moreover, others such as Pylak (2015) suggest that knowledge intensive services are the foremost carriers of innovative processes, and when path dependency is absent there is an opportunity for emergence from a state of punctuated equilibrium. This point reflects previous points regarding horizontal management as a means for promoting innovation. From a sociological perspective, Mayer (2004) argues that political systems such as liberal capitalism and socialism can no longer be considered a paradox, as they have left their path dependency due to fact that individual agents are capable of

influencing the emergent properties of political systems in relation to several variables. Moreover, Lin and (2017) suggests that such the creation of a shared *schemata* within organisations is capable of transcending complex situations and introducing new of new routines and the creation of setting up new rules and which may be seen as important signals and boundaries.

2.15 Signals and Boundaries and the Edge of Chaos

It may be suggested that all CAS exhibit internal boundaries which are capable of dividing the CAS into a diverse array of semi-autonomous sub-systems called agents (Holland, 2000) Complex Adaptive Systems consist of several agents following simple rules of behaviour which interact with each other within a leaderless and dynamic environment which is in essence self-organising (Holden,2005). For example, a simple system such as a road network is simple due to the fact that it is not unpredictable. On another level the workings of a computer microchip is knowable predictable and complicated. A flock of birds is complex transient and involves self-organised patterns is are difficult to predict. In contrast, chaotic systems offer turbulent and unpredictable outcomes at any level (Innes and Booher, 1999). One effective way of understanding complex adaptive systems is to use agent-based modelling in which each stakeholder involved in the process is seen as an agent conducting *meta-relationships* with other agents who include feedback and influencing behaviour (Williams-Garcia, et al, 2016). Therefore, agent-based modelling provides a way in which different models of CAS may be created and explored in order to identify the most successful possible outcomes. One way in which this modelling may prove to be useful is in the relation to policy development. Agent-based modelling provides the opportunity for examining the influence of feedback and behavioural change in the system as well as responses to policy initiatives (Lichtenstein, and Plowman, 2009). Modelling is capable of providing insights into emergent vulnerabilities, and how systems as a whole can be affected. Therefore, determining the possible routes for interactions with emerging CAS from the perspective of the agents assigned to manage the event provides invaluable knowledge. It may also be suggested CAS within organisations such as universities require concurrent management over long periods of time and that this involves the simple interactions of several agents.

In recent years, CAS theory has been used as a theoretical lens to examine organisational change. This also includes the use of new metaphors to describe organisations and areas of uncertainty. Zimmerman (2012) argues that organisations are as often presented as efficient machines which operate in an elevated manner which is delegated to others in measured operational units. This draws upon previous research on the edge of order and chaos, which differentiates simplicity and complexity through the use of metaphors: A car key is simple. A car is complicated. A car in traffic is complex (Waldrop,1992). Moreover, computer scientists

such as Langton (1990) use the phrase *edge of chaos* to describe a transitional phenomenon which is the opposite of ordinary systems which lack random influence. Within this context, Zimmerman (2001) utilises CAS as a theoretical lens in order to explore the edge of chaos, with senior managers and staff within a health-care organisation during a period of change. This is accomplished through the use of Stacy's Agreement and Certainty Matrix (1999), which is used to define how close an organisation is to the Edge of Chaos. In this process managers and staff work together to identify which organisational decisions are close to certainty, which are far from certainty, and which can be agreed upon. This process enables the identification of organisation in relation to the Edge of Chaos or what Zimmerman calls; The Zone of Complexity (Appendix 4). The most effective action within the Zone of Complexity, is the courage to innovate. A successful outcome is reported from the sessions with staff understanding why the board is at times trying to push them into the zone of complexity, and the board seeing why the staff wanted to cut off discussions and generate new ideas on some of the simpler issues (Zimmerman, 2011).

2.16 Clockware and Swarmware

Zimmerman draws upon several theories in order to develop a response towards emerging complexity within healthcare organisations. These include, Holland's identification of the simple causes of complexity, Stacey's call for creativity at the Edge of Chaos, and Kelly's concept of Clockware and Swarmware. Holland argues that organisations should be viewed as evolving organisms rather than machines, and that problems occur when the management of uncertainty is approached in traditional ways. Moreover, Stacey celebrates the Edge of Chaos as an opportunity for innovation and abstract thinking and sees this as the key to success. This idea is developed by Kelly, who identifies two distinct managerial approaches which may be adopted when complexity drives organisations to the Edge of Chaos and an impending sense of extinction. Within this context, Clockware is used to describe the formal way in which managerial processes approach organisational change. This is criticised for its lack of adaptability and creativity, as well as an inability to listen the organisation's *shadow system* (Zimmerman, 2001). The shadow system consists of the informal conversations which occur in corridors, lifts, and at water coolers. Such narratives are seen to operate on a marginalised communication frequency, while also containing an unexploited capacity to provide solutions at the edge of chaos. In this sense, Kelly's notion of *swarmware* invites the use of a freeform collectively amongst staff which has been compared to free jazz improvisation. This plays with the idea that breakthroughs occurring through abstract thought and that creativity and innovation are capable of transcending chaos. However, Zimmerman (2001) argues that too much of one approach or the other may be detrimental and therefore suggests that an alternation between formal clockware and innovative swarmware is the way forward. Such a

process would empower the staff within an organisation to utilise their full potential as creative problem solvers, whilst also providing management with the means to negotiate the edge of chaos. Mixing co-operation with competition. (Zimmerman, 2001). This is in contrast to the traditional method of managing change, which often involves bringing in a new manager who has another set of formal ideas.

Wheatley (1999), argues that the successful method of utilising leadership and the new science lies in an increased awareness of the beauty of *fractal forms*. That is to say, the way in which complexity is created out of simple means. This represents a shift in perspective from the equilibrium based approach of classic Newtonian physics, to the none-linear dynamics of Quantum theory. Kelly (1994) identifies the haste with which organisations implement complex initiatives as the cause of the problem. In contrast he suggest that systems should be built up slowly over time and that this allows the simple components the opportunity to test themselves against other existing systems. In a typically imaginative approach Kelly refers to Brookes work within the field of robotics and draws upon his notion of incremental construction, which seeks to grow complexity and not install it. Modular independent layers in which systems decompose into variable sub-units. This includes *decentralised control*: no central planning, and *sparse communication*: watching the results in the world and not the wires. The latter representing the antithesis of micro-management. Swarmware includes the notions of autonomy and working at the edge of a knowledge area, (Feldman 2002) and creating solutions which are seemingly incomplete, while still providing solutions. This involves building a good enough plan in what McCorduck (2007) identifies as *a modest compromise solution*. In this case an alternation between Clockware and Swarmware.

2.17 Conclusion:

The literature review explores the existing research which relates to the research question, aim, and objectives. The first section explores the complexities of the higher education landscape, the second section explores the emergence of the institutional level TEF, and the third section explores CAS theory. The first section on the complexities of the higher education landscape provides examples which link educational policies to political ideologies, in a way which illustrates their impact over time and the way in which they are capable of increasing or decreasing the scale of the sector. The topics of knowledge creation and commodification are also explored in relation to competition and marketisation. This represents an objective position which considers the historic impact of educational polices from both sides of the political spectrum. The second section explores the institutional level TEF, its connection to its predecessor the REF, and the reaction to the institutional level TEF Green and White papers. The third section explores CAS theory and this includes explanations of the several theories such as emergence, adaption, signals and boundaries, the edge of chaos,

disequilibrium, and clockware and swarmware. This also includes links between these theories and organisational change. Therefore, an attempt is made to develop a deeper understanding of CAS theory and its uses in analysing the impact of policy implementation within a wider context.

2.18 Research question, aim, and objectives

The research question:

“To what extent can the Teaching Excellence Framework (TEF) be identified as a Complex Adaptive System?”

The justification for the research question is based on a lack of knowledge connected to understanding how universities responded to the TEF in 2017, and how this response might be improved as the TEF develops in a subject specific format in 2020. Therefore, the research question seeks to understand the manner in which the multifarious mechanisms of the TEF operate within existing bureaucratic systems, in order to improve the future management of the policy. This achieved by utilising CAS theory as a theoretical lens and comparing the behaviour of this emerging policy and the behaviour of a CAS. Moreover, CAS theory includes several key elements which may be used to identify the presence of a complex system. These include; emergence, sudden transitions, none-linear activity, limited predictability, small changes leading to large effects, disequilibrium, self-organisation, uncertainty. Within this context Holland (2014) uses the word *agents* to describe any small element which is capable of disturbing a larger phenomenon, and in this case, the research explores the TEF as an educational policy which is introducing complexity into the Higher Education sector.

Aim and objectives

Aim: To explore business school responses towards the emergence of the Teaching Excellence Framework.

This explores the extent to which business schools have responded towards the TEF in 2017, within the context of organisational change management. In specific terms, the exploration focuses on the role played by business schools within universities while responding to policy implementation. In examining the narratives of thirty respondents from ten business schools throughout England, the research seeks to identify common themes and their associated variables within the context of the respondent iterations on the past, present, and future of the TEF. Although there is significant literature on the subject of change management, it has not

been explored from a Complex, Adaptive, Systems (CAS) perspective in relation to one particular policy. Therefore, the aim of this research focuses on the activities of business schools the emergent stage in a manner which is not been attempted before in a manner which is not been attempted before, in order to capture a particular moment in time within higher education.

Objective 1: To identify the presence of the TEF within business schools

The first objective seeks to explore where and when the TEF emerged within universities, in order to define if the TEF emerged across the universities or unilaterally within certain schools within universities such as their business schools. This approach has been undertaken in order to identify the scale of the emergence, and to explore this emergence as an introduction to CAS theory, which remains highly interested in identify the beginnings of complexity and the murmuration it is capable of producing. In contrast to previous methods of interpretation which identify the presence of emerging complexity as an alarming state within organisational change management, CAS theory sees the emergence of complexity as an opportunity to engage in innovative actions in a proactive manner which is not deterred by a lack of equilibrium. In this sense, CAS theory suggests that complexity (and its associated chaos) form part of a punctuated evolutionary system which is capable of creating a zone of complexity which requires a proactive and innovative approach in order to conduct the successful management of change.

Objective 2: To establish business school responses towards the TEF

The second objective seeks to develop the knowledge gained from exploring the emergence of the TEF within business schools in order to identify the specific manner of the responses. This includes identifying the person or persons who assumed responsibility response to the TEF in order to compare the level of response across the ten universities, in the analysis of 30 respondent opinions. Furthermore, to establish what networks of knowledge were utilised in order to respond to this emergence of the TEF in order to increase the understanding of how the response process within universities operates during times of organisational change. This includes comparing the responses from small, medium and large universities as well as comparing the responses from the Russell Group of universities and the Post 92' universities. This analysis will also include associated literature theories related to subject of policy response and organisational change.

Objective 3: To evaluate the extent of business School responses towards the TEF

The third objective seeks to identify the limits of the response towards the emergence of the TEF in business schools and to explore why these particular limits might be reached? For example, are limits reached due to a lack of experience? A lack of knowledge? Or a lack of time due to existing bureaucratic responsibilities? Furthermore, due to the fact that participation in the TEF 2017 is voluntary, the research seeks to explore the levels of motivation behind the response strategies in business schools, while also being aware that many universities chose not to participate on this occasion. This area of research is also capable of being developed further to include an exploration of attitudes towards the TEF from respondents narratives, in order to understand why the responses from each business school may have been limited and define the exact causes.

Objective 4: To develop a framework which improves the management of the TEF

The final objective draws together the knowledge which has been extrapolated from the previous objectives, in order to present a framework which is capable of the supporting managers who are dealing with preparations for the response to the subject specific TEF in 2020. For example, if the research suggests that a lack of time is a key factor in the limitations to the response to TEF 2017, a decision might be made to allocate more time for this important activity. Another example might include an increase in the allocation of staff to deal with the response to the TEF in 2020, due to findings which might suggest that the previous responses were understaffed and under resourced when dealing with policy which has the capacity to introduce complexity into organisations as well as impacting upon the historical replications. The fourth, and final, objective enables the researcher to focuses their attention on condensing the extrapolated knowledge from 30 respondents and their associated knowledge networks in order to promote improved responses to the TEF in 2020.

Chapter 3: Methodology

This chapter explores the research philosophy which is adopted for this proposed research. It also informs the research methods which are used within the current research, and this include the research philosophy, strategy, research design and ethical factors are also considered in in alignment with the research question and aims of the current study.

3.1 Philosophical stance

A research strategy may be defined as a choice of approach towards a specific research question which is capable of providing a methodological link between a preferred philosophy and the subsequent choice of methods which are used to collect and analyse the data (Denzin

and Lincoln (2005) cited in Saunders et al (2012). Moreover, others suggest that this process also includes an awareness of the open boundaries which exist between research philosophy approaches and strategies (Cummings and Kiesler, 2005). For example, there is a continuing debate in relation to the extent to which qualitative research can successfully access the subjective world of research participants from an epistemological perspective? In this sense, it may be suggested that the method chosen to analyse data needs to be guided by a methodological position and its underlying epistemological assumptions. The choice of a philosophical stance is therefore capable having a significant impact upon any methodology which is adopted for a research study. Burke (2005) cited in Saunders et al, (2007) argues that research paradigms act as a set of lenses for any research. Epistemology relates to notions of acceptable knowledge within the field of study. Saunders et al, (2007) suggest that there are three epistemological stances, which include positivist, realist, an interpretivist positions. Within this context, a positivist approach is preferable when working with observable social realities which can be generalised and relies upon a process of testing hypotheses and believes that everything can be known and proved (Barratt, et al 2011).

In contrast, Maxwell (2012) suggests that a realist approach considers that findings are probably true, and that the researcher is aware that triangulation is required in regards to any perceptions collected during the process . Moreover, this also includes related theoretical positions such as critical realism which believe that reality is composed of sensations and images (Fairclough, 2005). There is also continuing debate in relation to the extent to which qualitative research can successfully access the subjective world of research participants from an epistemological perspective? Within this context, Epistemology refers to assumptions regarding how individuals acquire knowledge and to what extent it is possible to understand such a process? It may be suggested that the method chosen to analyse data needs to be guided by a methodological position and its underlying epistemological assumptions. However, a *contextual constructivist* position may be more conducive to the analysis of interviews due to its assumption that multiple interpretations form an important part of any phenomena. Interpretivism is often ontologically and epistemologically contrasted with approaches such as activism and positivism which seem to favour objectivity. Interpretivism is related to phenomenology and symbolic interactionism and explores a continual process of interpretation and sense making through social interaction. Therefore, an interpretivism approach is conducive to exploratory research and qualitative analysis, where is can be used to explore the constructs of subjective knowledge and the interactions between respondents during a phenomenological occurrence such as the implementation of an educational policy.

3.2 Research strategy and design:

Yin (1994) suggests that there are five strategies; experiments, survey, analysis of archival information, histories and case studies. Each of these strategies is seen as presenting a method of collecting and analysing empirical evidence in order to collect and analyse verbal responses (Leighton, 2007). This proposed research is based on a qualitative approach and utilise semi-structured interviews in order to concentrate upon data which is produced from thirty respondents from ten universities in relation to the responses to the TEF education policy in 2017. In order to explore the levels of response within universities towards the TEF, ten semi-structured questions were developed. Saunders et al (2012) suggests that a survey strategy is most frequently used to answer the what, who, where, and how questions, and is therefore suited to exploratory and descriptive research. Within this research the *what*, refers to business responses towards the TEF in 2017. The *who*, refers to a sample of respondents which includes a cross sectional sample of university staff. The *where*, refers to ten business schools within ten different universities, and the *how* refers to one-to-one interviews either in person or on the telephone.

3.3 Researcher role and bias

An exploration of the emergence of the institutional level TEF provided an opportunity for the researcher to explore the chosen topic internally from a qualitative perspective and to draw upon the advantages of such a strategy - such as access to information and individuals which may under other circumstances have not been impossible to access. Moreover, ethical concerns of conducting insider research include *the ethics of friendships* which involve a level of negotiation and considered impartiality (Taylor, 2011). Within this context, it is suggested an analytical process such as insider research, also requires an initial acknowledgement of any *internal*, *external*, and *institutional* processes which combine to form any particular event (Costley et al, 2010). Furthermore, in recent years the positioning of insider research has become an emerging area of interest within qualitative research, where insider positioning is seen as an opportunity to establish rapport with individuals and organisations as well as an opportunity for a researcher to develop empathy and personal growth (Ros, 2017). In contrast, others have questioned the distinction between *insider research* and *outsider research* and concluded that the position of researchers is not as *insiders* or *outsiders* but rather as being on the position of being *inbetweeners* who move between one position and another (Milliagan, 2016).

Secondary research:

Secondary data was collected primarily from academic journal articles, books, policy documents, and Hansard. This enabled the widest range of opinions, concepts and theories to

be explored, in order to develop an understanding of what is already known. Where gaps in current literature were presented, primary research was used, which demonstrated the need for further research into the subject area.

Primary research:

Primary research was conducted through the use of one-to-one interviews and telephone interviews were used when a one-to-one interviews were not possible. The researcher adopted an interpretivist stance, and qualitative research methods were used in order to explore the subjective views and interactions of the respondents. A qualitative approach allows the researcher to explore a particular subject and gain insights into the respondent's perceptions and their interactions with the chosen topic.

Pilot research :

In order to test the validity of the six questions, a pilot test was conducted and completed by ten respondents who were likely to be representative of the final sample (Fink, 2003). This was completed in order to minimise the chance of respondents having any problems with when recording the data (Saunders *et al*, 2003), and to ensure that the data was clear and succinct. This action was conducted prior to the formulation of the final ten questions, which allowed any necessary modifications to be included before the research began. Moreover, this also provided parameters for the research in terms of time-scale and length possible for each interview. The interview questions used for this research were developed in line with the theoretical and conceptual framework which was formulated from the inputs which were gathered within the literature review. This enabled the researcher to scope the area of interest (Stokes and Wall, 2014) and refine the research strategy. In addition to the information gathered from the literature review, an extensive review of published literature in the areas of policy development, metrics, and official parliamentary responses was also undertaken. This included green and white policy papers, think-tanks, and Hansard

Research bias

Research validity is an important factor within qualitative research due to the subjective nature of the process. Therefore, concepts of truthfulness and accuracy represent expected standards within the interview process. Chenail (2011), suggests that instrumentation rigor and bias management are significant challenges for qualitative researchers who employ interviewing as a technique for data generation methods within their study. Two strategies which may be used to reduce researcher bias include the use of reflexivity and negative case

sampling. In the first instance, Alverson (2017) suggests that reflexivity may be used as a constant reminder to the research to consider their potential bias and how they can reduce or minimise any possible effects. Secondly, Chen (2018) suggests that negative case sampling includes the location and examination of cases which this confirm the expectations of the researcher and thereby create a sense of self-awareness and increase the scope for objectivity. Furthermore, Leighton (2017) argues that interpretive validity represents the degree to which a researcher is capable of representing the meanings provided by participants in order to express their point of view is accurately as possible. Within this context, the research has attempted to assume an objective position during the interview process and not to lead the respondents to specific or expected outcomes, but rather to let the research reveal as many layers of meaning as possible and to draw together, as many different perspectives as possible.

Alternative research perspectives:

In contrast to other research approaches such as positivism, interpretivism and phenomenology are interested in the structure of experience, and argue that individuals interpret how the world is defined through social construction (Stiles, 2003). However, critics of phenomenology argue that results are too easily influenced by the researcher's own subjective bias, and the results are therefore often too vague (Evered and Louis, 1991; Easterby-Smith *et al*, 1991). In contrast Realism, suggests that reality exists independently of its observers and adopts aspects of positivism and phenomenology, recognising both the positivist's view that knowledge as partial, and the phenomenologist's view that the individual's understanding affects their behaviour (Stiles, 2003). Whereas, quantitative research is used in the development of statistics, qualitative data remains frequently used to analyse opinions and experiences (Hastings and Perry, 2000; Ryen, 2011). For the purpose of this research, an interpretivist stance is adopted, which is conducive to qualitative analysis and the exploration of subjective meaning.

3.4 Justification for the adopted, research strategy:

This section provides the justification for the adopted, research strategy in six points which include the choice of interview strategy, sample size, number of questions, type of questions, key themes, and purpose of the study.

1)The use of semi-structured, in-depth research interviews provides useful means of exploring the views of respondents towards the implementation of the TEF.

2)The respondents represent thirty members of staff from across ten universities in England and therefore an interview approach is convenient in terms of time factors and economic considerations.

3)The research specifically explores the responses from business schools towards the TEF

4)The questions involve an exploration of a relatively new research area in academic literature, on the TEF.

5)The data explores key themes which relate to the response to the TEF through the theoretical lens of CAS theory and thus offers fresh perspectives on the chosen topic

6)The findings provide managers with methods of dealing with the TEF more effectively in future iterations.

3.5 Methods for data collection and sampling

The primary aim of the research is to explore business school responses towards the Teaching Excellence Framework in 2017. The study also aims to identify ways in which improved management of the TEF may be developed through a deeper understanding of the TEF from a CAS theory perspective. Forty universities were approached to participate in the research within that number and ten universities refused to participate on grounds of confidentiality. Therefore, the sample includes interviews with thirty respondents from ten universities across England. The research occurred over a three month period which includes June, July, and August, immediately following the TEF awards in 2017. The individual responses are confidential and anonymous due to the sensitive nature of the topic. The participants for this study have been identified through purposive and snowball sampling techniques. In this sense, the identification of pre-codes the themes forms an important part of the research. The use of qualitative research allows the opportunity to consider new approaches when exploring any topic, although this must be justified in order to express the reasons for a particular president being set. The use of snowball sampling is capable of providing a means of accessing seemingly impenetrable social groups. Moreover, Rowland and Flint (2001) suggest that snowball sampling exhibits the capacity to explore aspects of social experience which often seem hidden from the researchers view of social life. Purposive sampling is also known as judgemental, selective, or subjective sampling and represents an approach in which the researcher relies upon their own judgement when choosing participants for their study (Evered and Louis, 1999) The researcher is thus able to choose individuals whose views are conducive to the aims of the research. This is particularly useful when a researcher wishes to access a sub-set of

people. Moreover, the choice of a purposive approach includes the capacity to reject certain respondents who do not correspond to the research goals. One of the positive aspects of using a purposive approach includes cost and time. Purposive sampling may be the only option in some cases where there is only a limited sample available (Petre and Rugg (2010)).

The use of purposive sampling is also useful for exploratory research, where an intuitive approach is capable of being used within an anthropological perspective in order to discover possible layers of meaning. However, there is also criticism of purposive sampling due to a vulnerability of error within the researcher, a low level of reliability and a high level of bias, and an inability to generalise the results in comparison to other approaches Cairney (2013). Another sampling method which is related this approach and relies upon referrals to other people who might be interested in contributing to the research project. Snowball sampling represents a none-probability form of sampling which increases as it passes on from one respondent to the next, until the researcher decides that a saturation point has been reached and that the data is at that point repeating itself. This approach enables the researcher to explore a potential seam of knowledge such as the views of respondents towards policy implementation within organisations. TenHouten (2017) suggests that snowball sampling is often used in exploratory research in areas where an idea has not been clearly defined. However, Marcus et al (2017) express criticism of snowball sampling includes the presence of bias and the fact that the sample is none-random. Therefore, in order to explore a new area of research such as the TEF, the researcher chose to begin with purposive sampling in order to identify the depth of response towards the policy within one university before establishing that a saturation point had been reached Mason (2010). The researcher chose to use snowball sampling in order to proceed with an explorative approach. In terms of sample size, the heterogeneous nature of the respondents suggested that a sample of thirty would be adequate due to the time constraints of completing a doctoral study in parallel to full-time teaching commitments. The data was collected from July to September in 2017, immediately following the TEF awards. The respondents were interviewed on a one-to-one basis or recorded on the telephone when this was not possible. The interviews were transcribed and then coded using NVivo to generate *nodes*. These nodes were then grouped in relation to four key areas of CAS theory which were considered to represent important aspects in understanding business school responses to the implementation of the TEF.

The main function of this research is to provide a theoretical framework through which to explore the response of business schools towards the TEF. This also includes developing various concepts which identify practical applications for the findings. The researcher has attempted to understand why different levels of response towards the TEF may have occurred

at different universities, and the factors which might have influenced this behaviour? This study uses a qualitative research approach, which is exploratory in nature, due to the chosen topic of business school responses towards the TEF. Therefore, six specific questions were developed, as well as nine prompts which enabled the exploration of the topic to be approached from several different perspectives. The questions and prompts were utilised in one-to-one interviews which were conducted in person or telephone, when this was not practical, due to the respondents work responsibilities or geographical position. The questions and prompts used in the research are as follows:

1) Could you tell me about your role here?

Prompt: What do you know about the Teaching Excellence Framework (TEF) here?

Prompt: How you think the response to the TEF has been organised?

The first question is designed to identify the specific role of any respondent within their respective business schools. This also enables the researcher to consider the position of the respondent and therefore their subjective interpretations of their University's response to the TEF. The first prompt explores the level of knowledge which the respondent may or may not have? This enables the researcher to ascertain the levels of awareness that the respondents have in relation to a TEF and its possible impact within the Higher Education sector. The second prompt explores the levels of knowledge the respondents have towards the management of the TEF as an emerging policy? This also allows the respondents the time to consider the knowledge they have the management of the TEF and to draw together they have seen or heard from colleagues in the own university, or other universities.

2) To what extent does your role relate to the TEF and how?

Prompt: In your opinion, what knowledge do you think that you bring to the management of the TEF?

The second question explores the relationship between the role of the respondent and their relationship to the TEF. Moreover, the second part of the question seeks to encourage the respondent to become more specific in the manner to which their role relates to the response process. This prompt, encourages the respondent to explore their own educational and professional paradigms and to evaluate which skills from those paradigms are utilised within the response process and to what level this is achieved?

3) Could you tell me who else is involved and what roles do they have?

Prompt: Where are they from within the University

The third question seeks to broaden the enquiry and seeks to identify if there are potentially any of the members of staff within the business school, who are involved in the response process. In a more specific terms, the respondent is asked to identify their role within the process if possible? The prompt attempts to explore if members of staff from other departments might be involved in the response process?

4) Could you tell me about how the TEF is managed here, and how that came about?

Prompt: How was it organised formally or informally and from where?

The fourth question explores the respondents perceptions on how the TEF was managed and the level of knowledge they have on this particular situation? Moreover the second part of the question, encourages the respondent to discuss how the response to the TEF from a managerial perspective was developed, as far as they know...?

5) In what ways, if any, has the response to TEF here changed over time?

Prompt: In what way has the management response to the TEF changed since it was first organised?

Prompt: For each change what do you think encouraged that change?

Prompt: What else has changed?

The fifth question seeks to identify any time parameters within the response to the TEF, in order to explore the subject of time in relation to the development of a response strategy. The first prompt seeks to explore the manner in which the management response to the TEF developed an adaptive approach and what lessons may be learned from the experience? The second prompt explores if any small aspects of the process may have influenced the whole? This very much in keeping the CAS theory which identifies the manner in which seemingly small occurrences impact upon the behaviour of existing systems. The third prompt, seeks to ensure that there not any further changes which have occurred by encouraging the respondent to make sure that any other associated variables have not been left out of the interview?

6) In what ways, if any, do you think the response to the TEF here might change in the future?

Prompt: In what ways, if any, have things changed since the Gold, Silver, and Bronze TEF's were allocated?

Prompt: For each future change: What might prompt that change?

The final question seeks to explore the respondent's subjective views on the possible future of the response to the TEF and provides the space for conjecture and theorising. The first prompt encourages the respondent to answer specifically on the impact of the TEF awards, which have followed after the response process has been completed. The second prompt encourages the respondent to explore their own subjective interpretation of the elements which might cause potential change, and again this enables the researcher to identify if seemingly small changes might affect the behaviour of the a larger system in the future? The second part of the final prompt seeks to identify exactly what elements these might be?

3.6 Methods for data analysis

Stokes and Wall (2014) suggest that reliability, validity, and generalisability, are of equal importance within inductive and interpretivist social science approaches, as they are within deductive positivistic - like natural science research. Moreover, Saunders (2012) argues that quantitative approaches to data collection utilise graphs, charts, and statistics, in contrast to qualitative approaches which utilise an interpretivist philosophy in order to make sense of socially constructed meaning. Gaber and Gaber (2017), suggest that a Newtonian understanding of reality is conducive to quantitative research, whereas John Dewey's understanding of reality is conducive to an experiential approach which is exploratory and naturalistic. The difference between the two positions is illustrated by the following diagram:

Table 3.1 Comparison of Quantitative and Qualitative approaches	
Quantitative	Qualitative
Positivist, seeks objective facts about causes of social phenomenon. Little or no reference to subjective states of individuals	Phenomenological, seeks understanding of human behaviour from a social actor's frame of reference
Obtrusive and controlled measurements	Naturalistic and uncontrolled observation
Objective	Subjective
Removed from the data - an "outsider" view	Close to the data – an "insider" view
Verification, inferential, hypothesis testing	Discovery, descriptive, exploratory, inductive
Outcome-oriented	Process-oriented
Reliable "hard" data which can be replicated	Valid, "real" "rich" and "deep" data.
Generalisable, multiple case studies	Ungeneralisable, single case studies
Assumes a stable reality	Assumes a dynamic reality

Gaber and Gaber (2017),

For the purpose of this study, a qualitative research approach has been chosen, which is interpretivist, inductive, and explores business school responses to the TEF through the use of CAS theory as a theoretical lens. Following the structure advised by Saunders et al (2012), in regards to the progression of a qualitative project, the data analysis followed the following advice:

Audio recording:

Audio recordings were made of thirty respondents from across ten business schools across England. Semi-structured interviews were then conducted and each interview was then transcribed.

Approach to the recording:

There are generally speaking three options which researchers can choose when collecting data, and these include; summarise, categorise, or develop a narrative (Saunders, et al (2012)). In this case, a decision was made to categorise the data in order to aggregate and the information and explore any similarities with four areas from CAS theory which were identified within the literature review. The four areas are; emergence, adaption, signals and boundaries, and the edge of chaos.

Developing a summary:

A summary of the initial data was conducted in order to consider the progress of analysis, in order to consider the progress of the research at an early stage and decide upon any adjustments which might be necessary.

Developing a narrative:

A narrative was developed which paid attention to the temporal order and the organisational and social contexts.

Developing a category:

A set of provisional categories was developed in accordance with the research question and objectives, the conceptual framework research themes and initial propositions. In this case they were linked to the exploration of business school responses towards the TEF and also to four elements of CAS theory. A description of each of the four categories was produced, and each of the categories was evaluated to test if they were formed a coherent set of ideas in relation to the aim of the research.

Utilising Computer-aided qualitative data analysis software CAQDAS:

Through the use of the transcripts developed from the interviews, units of data were identified through the use of CAQDAS and memos were written alongside the NVivo nodes in order to capture any additional comments or ideas which came to mind as the process progressed.

This provided an example of the subjective relationship between the researcher and the interview text.

Working through one of the transcripts:

One of the thirty transcripts was chosen in order to explore potential of teams and to identify categories which related to the research purpose. Units of appropriate code labels within attached to these categories and then a description of each category was devised.

Allocate units of data to the set of categories:

Each of the forty nodes which were created by the researcher were individually analysed using NVivo cluster analysis to identify which themes were closest to the aims of the research, and within the context of the four categories of CAS theory which had been chosen: emergence, adaption, signals and boundaries, and the edge of chaos. At this point, the remaining thirty six categories were saved for future research towards journal publication. The eight remaining NVivo nodes which had been explored using cluster analysis were then grouped in a manner which placed two in each of the four areas.

Analyse the data by asking questions.

What are the main points of interest within the material? Within each category? How does the material which had been revealed through this interviews relate to any theoretical explanations which were initial propositions are there any connections between the categories? NVivo was used to identify the relationships between themes such as in this case, complexity;

Research design:

The research design involved interviewing thirty respondents from across ten universities, through one-to-one interviews with six open-ended questions and additional prompts to explore any possibility of extrapolating any additional nuances. The thirty interviews were then transcribed and loaded into NVivo qualitative analytical data. The list of respondents

Table 3.2: Respondent roles and dates of interviews			
Position within the University	Student numbers	Interview Duration	Date
Associate Head:	-30,000	36 minutes	June 2017

Senior Lecturer	-30,000	35 minutes	June 2017
Senior Lecturer	-30,000	38 minutes	June 2017
Professor	-30,000	42 minutes	June 2017
Senior Lecturer	-3000	36 minutes	June 2017
Senior Lecturer	-3000	35 minutes	June 2017
Professor	-21,000	40 minutes	June 2017
Associate Director	-21,000	30 minutes	June 2017
Senior lecturer	-21,000	32 minutes	June 2017
Senior lecturer	-22,000	34 minutes	June 2017
Programme Manager	-22,000	33 minutes	June 2017
Reader	-22,000	37 minutes	June 2017
Head of Education	-36,000	40 minutes	June 2017
Head of Student Academic services	-36,000	38 minutes	June 2017
Head of International	-36,000	34 minutes	July 2017
Principle Lecturer	-36,000	32 minutes	July 2017
Principle Lecturer	-36,000	30 minutes	July 2017
Undergraduate Coordinator	-36,000	33 minutes	July 2017
Professional Manager	-36,000	30 minutes	July 2017
Senior Administrator	-36,000	33 minutes	July 2017
Interim Associate Dean	-16,000	40 minutes	July 2017
Associate Dean	-16,000	37 minutes	July 2017
Senior lecturer	-16,000	32 minutes	July 2017
Senior Lecturer	-3000	34 minutes	August 2017
Interim Deputy Head	-3000	38 minutes	August 2017
Principle lecturer	-10,000	32 minutes	August 2017
Pro-Vice Chancellor of Education	-10,000	42 minutes	August 2017
Course leader	-6,000	32 minutes	August 2017
Lecturer	-6,000	33 minutes	August 2017
Senior Lecturer	+30,000	30 minutes	August 2017
Senior Lecturer	+30,000	34 minutes	August 2017
Senior Lecturer	+30,000	30 minutes	August 2017

Table 3.3: Example of respondent comments on the emergence of the TEF
Associate Head : “Too much focus on metrics and not enough on supporting evidence”
Senior Lecturer : “Small university, good communication, recognised for teaching at last”
Senior Lecturer : “Too many complicated systems at work not enough interconnectivity”

Professor : “TEF occurred during major restructuring, focusses attention on teaching”
Senior Lecturer : “Disappointed in the result, TEF is a game-changing policy in the sector”
Senior Lecture : The TEF has added complexity, it may become a box ticking exercise”
Professor : “TEF and REF upsetting the Russell group, how can TEF measure teaching ?”
Deputy Director : “TEF Metrics incorrect, person dealing with the TEF inexperienced”
Senior lecturer : “TEF response by one person, supported by self-regulating staff”
Associate Director : “TEF is a difficult mechanism, based on metrics several years old”
Programme Manager : “Pushed to be a research university when we do more teaching”
Reader : “TEF results appear to be inconsistent, there has not been enough consultation”
Head of Education : “TEF response has been hierarchical, with self-regulated assistance”
Head of Academic Services : “Need to join the dots and have contextual understanding”
Head of International : “Not much information passed down, one person dealt with TEF”
Principle Lecturer : “TEF is super complicated, information required, too many MBA’s”
Principle Lecturer : “The NSS and the DLHE need to be adjusted to reflect true picture”
Undergraduate Coordinator : “Good TEF scores attract good students and lecturers”
Professional Manager : “Wasn’t informed about of the TEF, but found out and helped”
Senior Administrator : “Worked for seventeen years and adapted to multiple changes”
Interim Associate Dean : “TEF is centralised at the business school, all about numbers”
Associate Dean : “Trying to please dissatisfied students, and not the good students”
Senior lecturer : “ A quasi-quantitative process which is really qualitatively driven really”
Senior Lecturer : “Its created a lot of frustration, not able to measure teaching accurately”
Interim Deputy Head : “Controversy because some Russell group universities got bronze”
Principle lecturer : “It’s horrendous, the extension of some really, really, bad practices”
Pro-Vice Chancellor of Education : “TEF is too complicated, invites the private sector”
Course leader : “One person within a loose team, we didn’t exactly know what to do!”
Lecturer : “Lack of clarification, small universities responding differently”
Senior Lecturer : TEF is a bureaucratic instrument used to hit targets, not teaching
Senior Lecturer : “Increased private sector competition, heading for the American model
Senior Lecturer : “Hierarchical response to the TEF, should include more staff in future”

Table 3.4: Examples of themes which emerged from the data:

Emergence	Adaption	Signals and Boundaries	Edge of Chaos
Business Schools	Sole responsibility	Government	Apprenticeships
Organisational Change	Self-regulating group	Market forces	Internet providers
Vice Chancellors	Managers and lecturers	NSS	Private Sector
Senior Management	Puzzlement	DHLE	Student Fees
Staggered Progress	Time factors	Metrics	Students union
REF	Lecturer satisfaction	Student satisfaction	Massification
TEF (Positive)	Collegiate networks	The Russell Group	Saturation point
TEF (Negative)	External knowledge	Post 92' universities	Higher Education
Complexity	Small Universities	Investment curve	Future direction
Pressure	Game playing	America	Innovation

This figure, provide examples of the forty nodes which are created within NVivo during the initial scoping of the data. Each one was then analysed using NVivo cluster analysis and a Sorenson coefficient. These were divided into four areas used within CAS theory in order to link the nodes to emergence, adaption, signals and boundaries, and the edge of chaos.

Table 3.5 Example of the final themes developed from forty initial themes			
Emergence	Adaption	Signals and Boundaries	Edge of Chaos
TEF	Organisational response	Government	Investment curve
Organisational Change	Time factors	NSS	America

The institutional level TEF fitted well into the emergence category and this also represented an example of the arrival of organisational change. The organisational response of the universities fitted well into the adaption category, as did the topic of time factors. Drawing upon the work of Holland (2012) in identifying the origins of complexity in a situation, the impact of governmental policies and the changing face of student expectations were fitted in well to the category of signals and boundaries. The impact of investment in estates and corresponding re-structuring, as well as a move towards an American educational model based on increased public sector involvement fitted well into the edge of chaos theme.

Research design:

Ghauri and Gronhaug (2015) suggest that research design represents a significant part of any research project and that this includes, details of the structure and the sample. Moreover, Jackson (2014), describes this process as *transparency-in-motion*, arguing that it promotes a reliable and trackable process, which can add rigor to the analysis

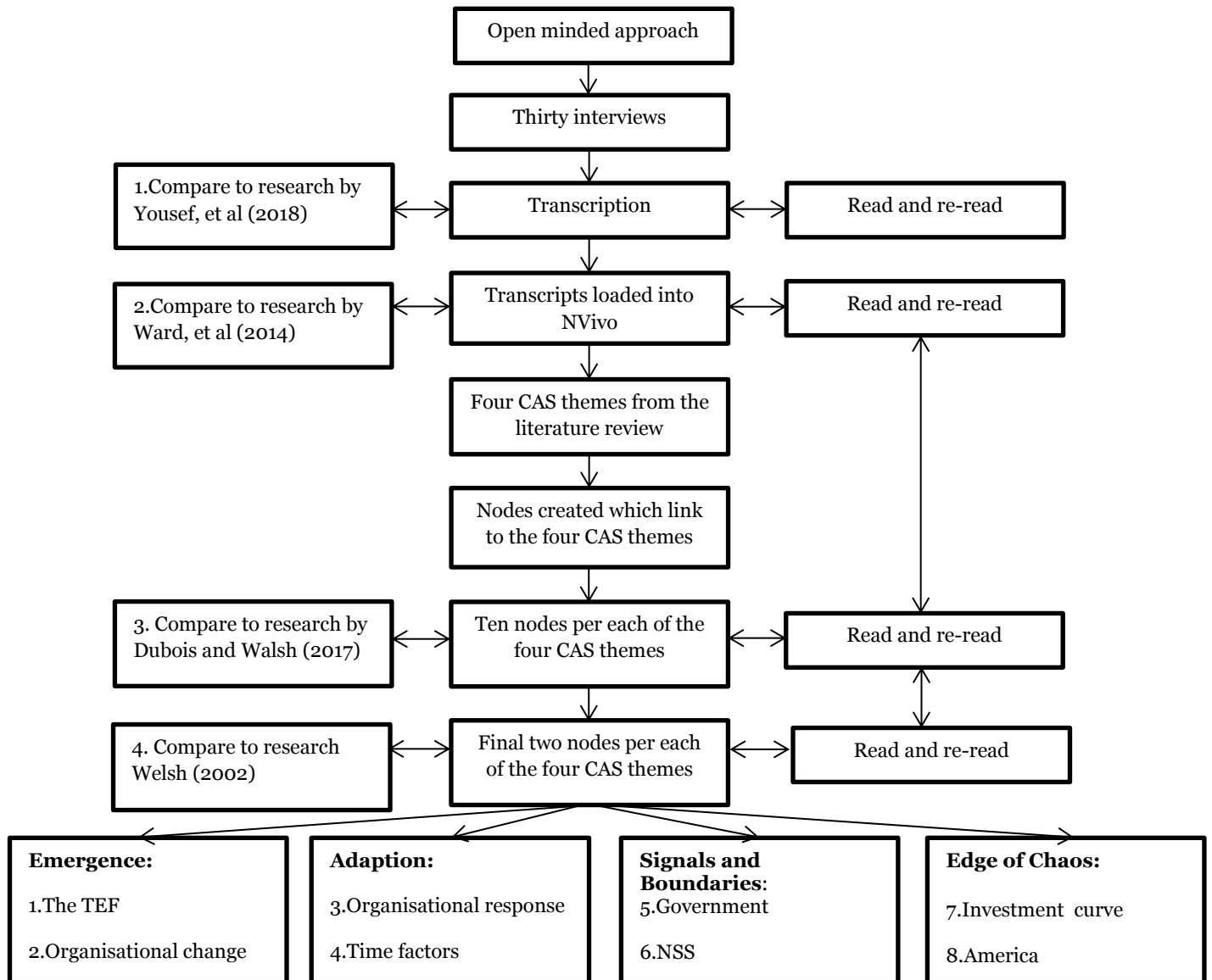


Figure 3.1: This figure illustrates the manner in which the researcher compared their own approach to four other pieces of research while developing the research design model, in order to provide evidence of academic rigor.

1. Compared to research by Yousef, et al (2018)

Yousef et al (2018) utilise cluster analysis in order to explore the responses of students towards on-line Massive Open Online Courses (MOOCs) within Higher Education. Their research seeks to understand why MOOCs as an emerging trend contains a drop-out rate of ninety five percent? They explore the complexity and diversity of the MOOC participants, using cluster analysis to identify the different patterns of *stakeholders* in order to promote an increased understanding of behaviours through the development of a *cluster schema*.

2. Compared to research by Ward, et al (2014)

Ward et al (2014) utilise *Leximancer cluster software* in order to explore the manner in which healthcare managers use informal networks to create knowledge within organisations, and their cluster analysis identifies managers as *knowledge engineers* who remake reality according to the ideas they have received from meetings, documents, or from senior or external outputs. One example of such activity may be seen in the actions of managers as they respond to implementation of policies and the manner in which they are hierarchical.

3. Compared to research by Dubois and Walsh (2017)

Dubois and Walsh (2017) utilise a mixture of bibliometric and clustering techniques in order to explore the manner in which French business schools have expanded their research networks on an national and international scale over a ten year period, and in doing so seek to understand the way they have contributed to the globalisation of research. Clustering is used in this case to explore the data and identify two core themes which develop from their analysis, which identify structural mechanisms key drivers such as *status* and *competition*.

4. Compared to research by Welsh (2002)

Welsh (2002) suggests that it is important for researchers to recognise the value of using both manual and electronic tools within qualitative data analysis and not to prefer one over the other, but instead remain open to the advantages of each. Moreover, the software is seen as being less useful in terms of addressing issues concerning validity and reliability in the thematic ideas, which can emerge during the process in a none-linear manner which offers an alternative creative method to the analysis, which consists of structure *and* innovation

3.7 Ethics

Saunders et al (2012) argue that there are four key areas within ethics which must be considered when beginning any form of enquiry. These include, ensuring that participants have not been coerced into their participation within the research, that no financial payments or reimbursement is offered to respondents, that any risks involved in participation are made

clear, and that respondents are informed that they may withdraw their consent at any time during the process. These points were taken into consideration by the researcher and used as a guide in order to establish and then develop an ethical framework. Furthermore, the researcher also paid close attention to the ethical research standards recommended by Stokes and Wall (2014) which include reference to The British Academy Of Managements Code of Ethics and Best Practice Policy (2013). Initially, the topic of ethics was communicated to all respondents in emails requesting participation in the research. A Participant Information and Consent Document was completed, and participants agreed to be interviewed. All the respondents stated that they wish to remain anonymous due to the sensitive nature of the enquiry. This also allowed respondents to discuss the managerial response to the TEF within business schools more openly. Overall, forty, universities were approached to participate in the research and within that number, ten universities refused to participate due to the sensitivity of the subject matter and concerns about sharing confidential knowledge.

3.8 Limitations

An awareness of limitations, is an integral part of any research process. In this sense, the researcher faced several challenges within the process of the proposed study. The interviews were carried out at the end of term during a three month period following the TEF awards in 2017. The sample was limited to thirty respondents from ten universities, due to time constraints imposed by full-time academic responsibilities and the availability of the respondents within their own academic and administrative timeframes. The sensitive nature of the TEF meant that all the respondents requested anonymity. Furthermore, the sensitivity surrounding the TEF also meant that ten universities refused to participate in the research and did not wish to discuss their response strategies. The time taken to approach these universities impacted upon the time required to conduct other research activities. Due to the fact that the majority of universities who voluntarily participated in the TEF in 2017 were from England, the sample only includes opinions from respondents working in ten English universities. This was the result of an exponential, non-discriminative, snowball sampling approach, rather than a conscious decision on behalf of the researcher to concentrate on one particular country or region. The limitations of snowball sampling include its capacity to produce a randomness within a sample. Moreover, snowball sampling also includes bias due to the involvement of the participant's social networks which may have similar views. However, the sample does include comments from a broad range of respondents, which include associate vice chancellors, associate deans, professors, senior lecturers, lecturers, associate lecturers, and senior administrators.

3.9 Summary

This chapter illustrates the research methods, strategy, philosophy, research design and methods of analysis within the research study. These elements provide a structural representation of the design as well as evidence of the way in which a rigorous approach has been adopted towards the research. All the respondents were chosen in order to explore the responses of business schools within each university, although some comments refer to other organisations. The sample contains a bias towards business schools, and does not reflect the opinions of other faculties across the University. The researcher is also aware of their own inherent bias as a senior lecturer working within a large metropolitan university. However, every effort has been made to maintain objectivity.

Chapter Four: Data analysis and findings

4.1 Introduction

The data was generated from a sample of thirty respondents and this was then organised into codes and sub-codes in order to facilitate detailed analysis. The data was uploaded into NVivo and the clusters were analysed several times until groupings began to form. These were then analysed again through several re-readings in order to refine any emerging themes. Each of the themes was chosen after careful consideration in relation to the aim and objectives of the research. Nodes were created in NVivo from the emerging themes and these were compared with each other until the most prominent were identified. The codes are grouped together due to the considered connections to each other. The codes begin with business schools and then explore the role of senior management during the implementation of the TEF. This is then developed further to include sub-codes such as competition and ingredients for change. The code for staggered progress explores the notion that universities do not operate in a regular manner and that their methods of operation are full of stops and starts and multiple changes in leadership. The data was inputted into NVivo and a *Sorensen coefficient* was used to identify words which matched. The decision was made to present the results in an NVivo format which has been chosen in order for the reader to be able to examine other clusters which also appeared. A written description of each of the chosen clusters is also provided.

**Every effort is made to present the findings in the clearest possible manner. As noted in similar research works, NVivo produces its analysis in minute detail with grey lettering. Therefore, the decision has been made by the author to present the NVivo clusters in a format*

which may be enlarged if viewed in its electronic version, or else, followed though the highlighted words and analysis below each figure.

4.2 Emergence

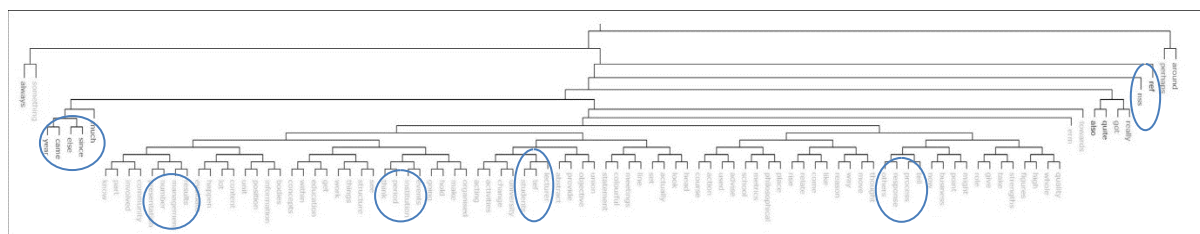


Figure 4.1: The Teaching Excellence Framework: Institutional Level

The first cluster on the right contains the words; **REF** and **NSS**. This identifies the presence of policies within the universities which are already generating complexity within the existing bureaucratic mechanisms. This relates to Stacey’s concept of *complexity and creativity within organizations* (2002) which identifies three stages *simple, complicated, and complex*. Moreover, this reflects comments from respondents which suggest that a substantial amount of complexity already exists within the university due to on-going responses to government policies, such as the Research Excellence Framework (REF) and the National Student Survey (NSS). This also identifies the presence of two educational policies which have significantly influenced educational landscape into which the TEF has emerged. The following cluster contains the words; **tell, process, response, and others**. This cluster relates to Cunliffe (2003) and the *concept of inter-subjectivism* as it identifies the way in which the respondents use subjective sense making while informing each other about the mechanisms of the TEF and their respective university’s response, through a pre-existing collegiate network. These words also link to critical comments from the respondents in regards to a sense of disconnection from the response process which includes a sense of marginalisation, exclusion, and otherness. This is due to the fact that the response to the TEF was organised on this occasion by senior management. The middle cluster contains the words; **lecturer, TEF, and students**. This reflects the emergence of a new set of relationships between lecturers, the TEF and students which includes comments which suggest that the TEF is a “blunt instrument” and “bolted on pressure” as well as being unnecessarily complex.

One aspect of the relationship between the lecturers and the TEF reflects a change in the role as educators, which Hodgeson and Spours (2016) identify as a form of ontological anxiety due to the imposition of service provider roles. The student relationship towards the TEF remains muted with respondents showing surprise at the lack of response from the students union towards a policy with is capable of raising their fees. A potential boycott of the NSS is reported, but remains inactive. The following cluster includes the words; **events, institution, period,**

and **think**. This refers to comments which suggest that the emergence of the TEF is a significant event within higher education and that a period of thought is required in order to understand how to successfully manage this policy. In this respect it reflects comments by Meadows (1999) who suggests that policy implementation part of an on-going process which includes *strategic leverage* at certain points. In a broader sense this also links to thinking time or the amount of time used when responding to policies in addition to the *thinking time* which maintains existing policies and the impact this is also capable of having on existing responsibilities. The next cluster includes the words; **results, management, information, and presentation**. This relates to comments within the literature which refer a major debate about the use of metrics and questions regarding their accuracy. This reflects Rawls (1987) and concerns regarding metrics within Metric Tide (2015). This illustrates that metric measurement of what one respondent calls the “phenomenon of teaching” is nothing new. One example of this reflected in negative comments towards the TEF supporting documents which seek to provide evidence of the university’s transformative accomplishments. The final cluster includes the words; **much, since, else, came, and year**. This reflects comments by Zimmerman (1999) who observes complexity emerging in a health care organisational during the implementation of policies. Moreover, this cluster reflects comments which suggest that the TEF was one of several other policies which emerged within the academic year. These included policies which introduced apprenticeship schemes, departmental changes, new faculties, building projects, and changes in student expectations. This illustrates that the complexity of the TEF emerged within several other existing complex mechanisms. Comments which relate to these clusters include:

RB3: *“Well, the first time we ever heard about it...the first thing that we heard there...everyone from all the faculties were there, and some-one talked about how this is coming. I think that it was a year ago when we first talked about it. They said it was like the REF, but my understanding of it is that...in a way...it’s about the fees that we’re now charging and we now need to make sure that we are giving value for money type of thing, and the quality that goes with it. So...in my understanding of it...this is why the government has put this into place. We were really excited by it...excited as an institution, because we’re very much more about teaching than the research side of things. So we looked at it as a positive thing overall...and everybody has been very excited and positive about it because that’s our area of speciality...because that’s our side of things (teaching) and we’re really low on the research side and a lot of league tables have a lot to do with the research side of things.*

This perception from a bronze awarded university suggests that the respondent is part of a collegiate network operating across faculties which communicated the emergence of the institutional level TEF. This also reflects Traud et al (2011) who explore networks amongst

students and their contribution to sense making. Moreover, there is evidence to suggest that the TEF was initially compared to the previous policy the REF. However, further discussion within the collegiate network enabled this comparison to become more defined and the TEF was then identified as a policy with different aims. This respondent mentions excitement and anticipation in regards to the TEF, and this is also a topic that Kaufman (2003) discusses in relation to levels of excitement and anticipation that experienced by teachers as positive forms of anxiety or nervousness. Moreover, the response mechanism is most noticeable from respondents working at vocational universities within the sample, in contrast to those which focus more on research where there is less teaching. In contrast the following comments reflect an awareness of impending complexity and a call for more clarity:

RB4: *“We were really excited about it and then more came through...more conversation about how it’s going to evolve...and it’s going to evolve first with this...and then this...so we discussed it and everybody’s looking at it and saying...this looks complicated and how is this ever going to play? I think that in the fourth year, there’s something really complicated that’s going to happen...and I forgot what it was...so everyone was scratching their heads and saying...this is super complicated...and I don’t know how this is going to happen?”*

This perception from another bronze awarded university suggests that an initial response towards TEF developed into incomprehension due the emergence of complexity introduced by the TEF, as well as lack of clarity in regards to its requirements. As with the previous example, there is evidence of the respondent drawing upon subjective knowledge from a collegiate network. This also relates to Zimmerman and Hayday (1999) who discuss the emerging complexities within health sector organisations. It may be noted that any initial anticipation of the TEF is surpassed by a communal sense of doubt due to an increased awareness its complexity. There is also evidence of forgetfulness, which appears in several respondent comments and is linked to having too many things to think about at once. This reflects Cecez-Kecmanovic (2004) who argues that there are four types of knowledge; individual, collective, organisational, and cultural. In fact there is evidence that *all four types* are used by respondents in a daily basis. In this sense, the TEF is seen as an emerging mechanism which is highly complex and linked to the introduction of uncertainty. Further comments which relate to these observations include:

RG29: *“One of the things that the TEF has done is to remind universities of the importance of teaching and taking the focus back on to lecturer...”*

This perception from a gold awarded university represents an initial response towards the TEF which celebrates its capacity to elevate teaching to the level of research, while reducing

uncertainly about its merits. In contrast, other comments reflect negative responses towards the TEF for a variety of reasons:

RS17: “*I think staff are quite sceptical... of yet more measures...*”

This perception from a silver awarded university suggests that there is a tired scepticism amongst staff towards the implementation of policies such as the TEF, and the additional complexity they are capable of generating within the existing mechanisms of their university. This also relates to comments which suggest that there are already multiple responsibilities and that a limit may have been reached.

RS14: “*It’s a stick isn’t it? That they’re going to beat us with whether we like it or not...*”

This perception from another silver awarded university represents criticism of the hierarchical nature of the TEF and manner in which it is being used to introduce several other measures such as increased marketisation and competition. This reflects the views of Olssen and Peters (2005) in regards to the influence of neo-liberalism as a dominant force in the sector.

Organisational Change

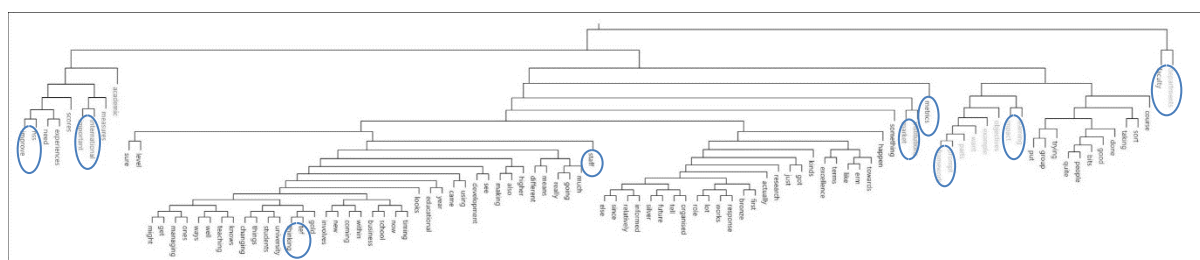


Figure 4.2: Organisational change

The first cluster on the right contains the words: **departmental** and **faculty**. This refers to respondent comments which suggest that significant organisational change has occurred within the higher education sector in the few last years due to competition and investment in estates. This also reflects (Siaw and Yu, 2004) who identify increased competition within the sector due to the influence of neo-liberalism. This has resulted in the consolidation of several departments and in some cases an increase in size of faculties. The following cluster includes the words: **learning** and **impact**. This refers to comments from respondents which suggest the presence of organisation change has also introduced disruption in terms of building construction, staff movement, and therefore at times impacted upon the students experience. The respondents suggest that the high levels of investment are linked to revenue from increased fees, which have in turn caused disequilibrium within the sector (Buzzoto, 2011).

However, others such as the next cluster contains the words: **prompt** and **framework**. The subsequent cluster contains the word: **metrics**. This refers to the role of metrics and their influence upon the position of universities within league tables as well as the implications this might have for the future recruitment of students. The next cluster includes the words **institution** and **market**. This relates to the competition between universities within the higher education sector and respondent comments which suggest that the successful management of metrics and the TEF have the capacity to improve the position of universities in the minds of potential students. The cluster in the middle includes the words: **staff**. The refers to comments which identify the movement of staff within universities as one of the factors which make universities different from other organisations. This includes departmental re-structuring, promotion, and redundancy. The cluster on the left includes the words: **tef** and **thinking**. This concerns the emerging influence of the TEF within senior management and the hierarchical impact this might have upon the teaching staff, especially as the TEF moves to a subject level in its next stage. The following cluster includes the words: **international** and **important**. This refers to comments from respondents who suggest that international agenda represent another change within their universities due to new visa regulations. The final cluster includes the words: **nss** and **improve**. This reflects comments which suggest that the NSS requires improvement due to an inability to generate accurate metrics. The use of the NSS in its current form represents one of the major complaints within the research. Comments which relate to this clusters include:

RS22: *“In all my 17 years here I have had the administrative responsibilities across several departments and I have worked across all the faculties and dealt with all the student issues and administration associated with that. In those years I’ve seen things change here and I’ve had to adapt to these changes... really adapt . For example, the foundation year which I worked for several years was once one department and then it was moved so that it would be in every faculty so that teams within each faculty dealt with the foundation and the original central team was moved across all the different departments... The things change within universities over time – whether that was a good thing to do? Personally, I think the students got much more of a one-to-one service when the foundation year was in one place rather than spread across the University, but I had to adapt to that change... happens all the time as different policies are implemented and we have to have strategic responses. I think funding is a lot to do with it. We used to be centrally funded and they put foundation year out across all the different departments than the funding was spread out on the responsibility of those departments of one central place... It was big change and we did have a restructure. Similar thing now... All departments of being restructured because of changes and the TEF is a lot to do with that and the REF also.”*

This perception from a silver awarded university provides a historic perspective over seventeen years within one university and illustrates the multiple organisational changes which occur within such a timescale in response to both internal and external policies. Moreover, Sternglass (2017) suggests that longitudinal research into the student experience also reflects the impact of educational policies from a student perspective. There is evidence of the multiple roles which the respondent has undertaken over this time across several departments and faculties, in addition to dealing with changing administrative duties. This highlights the multiple responses which are required within limited timescales. This reflects Chen and Lu (2002) who argue that a synchronised approach is necessary in order to manage multiple oscillation. Moreover, the respondent refers to an internal policy which has prompted organisational change – in this case the re-structuring a foundation year which has been decentralised across several faculties. The respondent observes that universities change over time and often quite abruptly on many levels. This is reflected in previous research by Schegloff (1987) who explores the impact of organizational demands of interaction between micro and macro elements. There is a comment relating to the levels of service which a centralised approach can provide and in particular through increased one-to-one contact. Within this context, organisational change is connected to the emergence of policies which are themselves to available funding levels.

RB3: *“I think that with all the stopping and starting throughout the academic year as well as changes in leadership... I think issues around all these things, I mean just talking to people this week... And people saying “why does it always feel like we are in year one in terms of what we’re doing?” And people were saying that if you’re running your own business in the first year it might be new but after the sixth year you could really know what you were doing... But if you’re running a University every year... Everything is new... And every year we don’t know what we’re doing and you think to yourself “why don’t we know what doing?”. And I have no idea? I mean this morning I was trying to work out timetables because we’ve got everything between 30 and 80 students... We can’t find the classroom big enough and you think “well, why is this?” I suppose it’s because the University is a chaotic system... Because you’ve got lots of people pulling in different directions and you’ve got no clear idea of whether it’s a managed system or it’s an evolutionary system and the Vice Chancellors pay themselves more to come up with ever more elaborate visions... Which are never implemented because there’s always those breaks, so every year we all come back and say “we’ve forgotten that”.*

This perception from a bronze awarded university develops the previous theme and discusses the unique nature of universities as organisations with particular reference to the continual

presence of organisational change. This theme is reflected in previous research by Higgs and Rowland (2000) who discuss the quest for change management competence. The respondent also identifies that in contrast to businesses in the private sector, universities operate within *terms* which stop and start throughout the year. The university is described as a chaotic system which relies upon improvisation and operates through a series of stops and starts. This can be linked to CAS related theories such as *punctuated equilibrium* (Gould and Eldridge, 1972) which suggests that evolution occurs, following dramatic events which propel change, with one example of being the TEF. The respondent suggests that chaotic systems within universities also have an impact upon student satisfaction due to the time required to manage change (Senior et al, 2017). Moreover, not enough time is provided for lecturers to become familiar with the management of their units before being given other responsibilities. Therefore the overall picture of organisational change within universities includes time consuming responses to external and internal policies, which often overlap or clash. Moreover, this comment also includes the observation that some policies are not responded to due to demands upon time, understaffing, and the breaks between terms. Another comment which relates to these themes includes:

RB3: *“I think that there is a danger that universities are super tankers by comparison and change very slowly...and “we want you to look at this parameter...that parameter” you know...the NSS, TEF? So you might not know which of the spinning plates we (lecturers) are supposed to go by...”*

This perception from a bronze awarded university uses metaphors to describe organisational change within large organisations as well as the multiple responsibilities of lecturers. The use of the metaphor “super tanker” relates to the slowness with which large objects are capable of responding to change, and the metaphor “plate spinning” refers to music hall acts in which performers keep several plates spinning on long sticks until one of the plates becomes unstable or falls. Furthermore, this metaphor appears within several respondent narratives when lecturers describe an overabundance of duties. The reference to multiple responsibilities also links to the previously discussed subject of time. This is evident in comments relating to the challenges of balancing accumulated duties with an increased student demand for one-to-one tuition.

4.3 Adaption

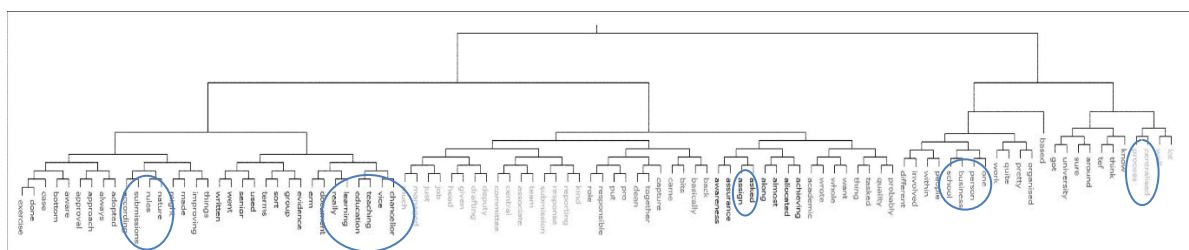


Figure 4.3: Organisational response

The first cluster on the right contains the words; **centralised** and **process**. This refers to comments from all the respondents which identify that the response to the TEF was centralised and hierarchical. The following cluster contains the words; **one**, **person**, **business**, and **school**. This develops this theme further and identifies that in each case the responsibility to produce the final response to the TEF was handed to one individual in each university. The following cluster contains the words; **assurance** and **awareness**. This reflects comments from respondents that the TEF is seen as an example of quality assurance and that the purpose of the response was to convince the TEF committee that a certain level of quality was evident within the university. **Chancellor**, **vice**, **teaching**, **education**, **learning**, **really**, and **document**. These words link to previous clusters and to comments from respondents which suggest that the response process included an individual in each university reporting to their respective Vice Chancellor, while also receiving support from an unstructured, self-regulating group. The final cluster contains the words; **nature**, **rules**, **submissions**. These words relate to comments from respondents who completed their TEF submissions and criticised the rules for being unclear. One example of this is a perceived lack of clarity is regards to the supporting document. Comments which relate to these clusters include:

RG28: “Internally...It was very much one person, with our Dean of teaching and learning leading the way while reporting to our Vice Chancellor ... So I think...yeah... They sort of put the whole shebang together. We did have a TEF working group... I’m not involved in that but I do believe it’s about to change its role... I mean...not its role its name_and that it included people working across the University. However, I think the Dean of Teaching and Learning was the person leading the way on all this...and the Vice Chancellor crossed the T’s and dotted the I’s”.

This perception from a gold awarded university suggests that one individual within this university was given the responsibility of managing the response to the TEF, while reporting to their Vice Chancellor and receiving support from an unstructured, self-regulating group. This point was reflected within all the comments of all the respondents. Following the TEF

means of measuring teaching quality – rather the satisfaction of customers. The following cluster contains the words; **line, action, presentation** and **focus**. This refers to the fact the a great deal of time and line management is spent on the preparation and presentation of the NSS. A sub-cluster of this theme includes the words: **rise, instrument, and meetings**. This refers to comments from respondents in relation to the emergence of the TEF as a new metric instrument and complaints that the response to the TEF has resulted in too many time consuming meetings. The cluster in the middle includes the words; **tef, students, acting** and **change**. This relates to a sub-cluster which suggests that universities are faced with the challenge of implementing the TEF, managing students who are acting in a new way (as customers) as well as responding to significant change within the higher education sector. The following cluster includes the words; **process** and **bodies**. These refer to comments from respondents who complain about the time which is taken to implement processes and the time which is taken to respond to regulatory bodies. The final cluster includes the words; **results, tell, lot, and number**. This continues a theme within the respondent comments that the focus of senior management remains metrics and their impact upon the university league tables. Comments which relate to these clusters include:

***RS14:** “No one solicited my involvement of the TEF but having said that, I have been very much consulted about the NSS and the KPI’s (key performance indicators) and how to improve progression and retention and it’s amazing how much time is taken up as a result of all this, and any new activities such as the REF and the TEF coming down the chain of command. We belong to the faculty of Arts and Sciences which has eleven different departments in it – so at the weekly meetings of the department directors the whole thing was fed down from directorate to Dean’s to us at the weekly meetings of the faculty management group and then devolved down to the lower forms of animals like myself...who maybe do get involved with some of the things. It’s been hierarchical...I mean...nobody from directorate erm has...said it. The TEF has been mentioned in meetings and so on...but there have been no top level meetings coming through...no-one has spelled it out...but, no-one is trying to ignore it either...for example, the Vice Chancellor has a meeting with staff at the start of each semester and he mentioned it (the TEF) as soon as it was put forward...and it came out again in the September meeting and it would have come up at the January meeting...but I was abroad...in the January meeting it would have come out again...the TEF and one of our associate directors...we’ve got two associate directors in the department and one of our associate directors has been looking at elements of the TEF and some of us...like me for example have been tasked with pushing forward one or two initiatives from TEF.*

This perception from a silver awarded university illustrates the complex environment into which the TEF has emerged while also identifying several pre-existing policies. This includes,

the NSS, KPI's, and the REF. There is an allusion to the hierarchical manner in which members of staff were informed about the TEF and the time factors involved while managing existing government policy. The respondent states that they belong to a large faculty with eleven schools and that several meetings occurred before the TEF was discussed. This also represents an example of what Phillimore and Price (2008) is an example of *cladogenesis* or an evolutionary splitting. Which in this case concerns a possible gap between senior management and staff. Within this context, the respondent describes members of teaching staff as by using the metaphor "lower forms of animals". This is concurrent with other comments within the research where lecturers describe their position as being "lower down the food chain" of the university. A similar situation is discussed by De' Bell and Clark (2018) in relation to the need for mindful leadership in *interprofessional* teams with the healthcare sector, which is often compared to higher education. The respondent also states that they were due to attend another meeting in January but were unable to attend due to an international visit on behalf of the university. This suggests that staff mobility is also capable of impacting upon the delivery of management strategies.

RS24: *"When I worked at a teaching based university I used to do about 18 hours a week delivery and I still know people who are doing about 18 hours a week in similar places. Now that I work at this Russell group university my teaching is capped and I do 2 to 4 hours teaching per week directly and I now know from yesterday that I am expected to have four Ph.D. students on the go all the time... So I know I should have one each year maybe one overlapping somewhere else... and the students take-up a bit of time and that's my three hours of my daily teaching time and some of them are near to completion...cited in terms of research and expected to put out a certain amount of research papers... this doesn't match against TEF and the other thing that is quite interesting...when I taught at my previous university we put in a lot of hours so I would teach a lot of hours... In contrast now I'm capped so I might do two hours per week plus other things, but the amount of contact time... the amount of contact time the students have with the subject is probably half of what I used to do or a quarter even in some cases..."*

This perception from a silver awarded university compares the differences in time allocation between a teaching based university and research university. There is a discussion on the impact such times allocations might have with a reduction of teaching hours within the research based university and an overabundance in the teaching based university. However, the respondent also points out that that allocation of time within the research based university is also capable of reducing the amount of contact time with students. Moreover, the subject of contact time is discussed by Senior et al (2017) in relation to student satisfaction in the age of a educational consumerism. This reflects comments from other respondents who express

concerns regarding the balance between student requests from increased one-to-one contact time and an overabundance of other duties such as administration. Another comment which refers to time factors within universities states:

RS24: “I think that the TEF has introduced more complexity into the higher education sector and you could think about all the extra hours of work that it has produced across all the faculties and all the extra hours of work carried out by staff.”

This perception from a silver awarded university identifies the emerging complexity which has been introduced to universities since the emergence of the TEF. Moreover, it also highlights the amount of additional time which has been required across the university while adapting to this government policy. This includes recognition of the additional hours which have been spent by staff across all faculties.

4.4 Signals and Boundaries

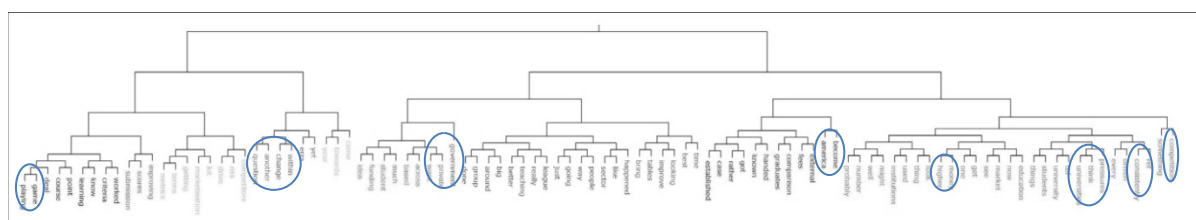


Figure 4.5: Government

The first cluster on the right includes the words: **competition**. This relates to comments from respondents who recognise an increased sense of competition within the sector which has developed from the established university league tables to now include the REF and the TEF. The following cluster includes the words; **ref** and **constantly**. This identifies the constant presence of the REF even during the emergence of the TEF. A situation which may have significantly impacted in the available to for senior management to respond to the TEF. The next cluster includes the words **pressures**, **think**, and **universities**. This continues the previous point which highlights the additional pressure which the REF and TEF added to the existing academic calendar. It is interesting to note that a lack of thinking time represents a significant theme within the research and that a lack of thinking time may have contributed to significantly to the quality of the response. The subsequent cluster includes the words; **money** and **higher**. This illustrates the point that investment is also linked to completion with other universities and an emerging private sector which is aware of the sector’s profitability. The next cluster includes the words; **become** and **America**. This reflects comments that the sector is advancing to the American model which emerged over a decade ago, with varying results. Several comments identify that the TEF forms parts of the government’s to reduce the

size of the sector through increased competition. The cluster in the center includes the words; **government**, **private**, and **want**. These reflects the previous comments and identify privatisation of the sector as an underlying governmental ambition. The following cluster includes the words; **within**, **change**, and **question**. This suggests that the emergence of the TEF has raised new issues which will require attention – this raises the point that policies do not complete processes, but introduce new and evolving systems. The final cluster includes the words; **game** and **playing**. This relates to the possibility there is game playing due to the implementation of the TEF. This might include game playing by the government, game playing by universities, game playing by students. Comments which refer to these topics include:

***RB2:**“My research is in relation to the government policy changes...so I have been examining the green paper and the white paper and using critical discourse analysis to look at how it came to pass how that particular policy has progressed in the way that it has progressed. My proposition is that the TEF is a deliberate distraction from the more radical elements of the green paper and the white paper which is a move from a new public management era to real edu-capitalism and that the TEF as a er... classic new public management tool is there because the sector finds it familiar and comforting and likes to argue about it so it has diverted the policy community to focus on what should be included and what shouldn't be included. I don't think that the government really cares too much about it because it was there to make sure that people spent less time looking at the real effects of the latter part of the green paper which were the privatisation aspects... But, with a different hat on as an institution in the middle of all that... It may potentially have some difference in terms of our market... In terms of our brand visibility erm... All that sort of thing.”*

This perception from a bronze awarded university refers to the respondent's critical analysis of the TEF and the signals and boundaries it is capable of introducing. Within this context, the respondent suggests that there may be sub-themes within the TEF which have wider implications. This reflects Thomas (2014) who discusses future scenarios for management in a changing sector. From this critical perspective, elements of the TEF are seen as a deliberate distraction from the introduction of a new form of policy management and this is linked to the term *edu-capitalism*. In particular the respondent refers to the latter part of the TEF green paper and the inclusion of mechanisms which promote the private sector. However, the respondent then changes their perspective to that of a manager, which reflects previous research by Meadows (1999) in relation to leverage points, and how they are capable of intervening in a system. This suggests that the TEF is also capable of intervening with the status quo and elevating institutions within the market. Another element of higher education which emits signals and boundaries is the seen as being the NSS.

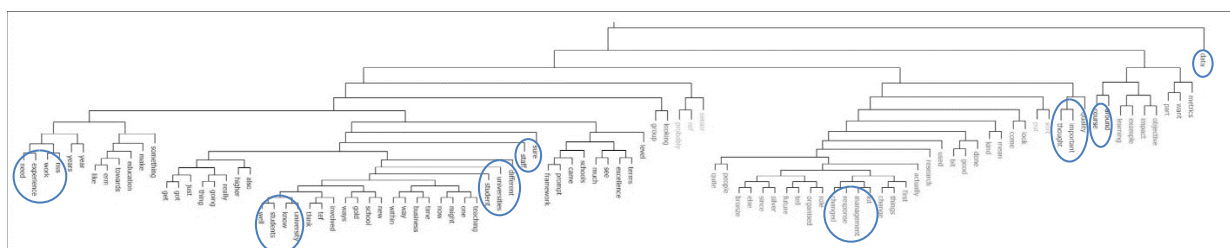


Figure 4.6: NSS

The first cluster on the right contains the word; **data**. This reflects comments from respondents which identify the analysis of data as a core management activity during the emergence of the TEF. The following sub-cluster contains the words; **around** and **course**. This refers to the metrics which now increasingly surround every course and the fact that this form of assessment is due to increase leading up to the TEF in 2020. The next sub-cluster of data contains the words; **quality**, **important**, and **thought**. This relates to criticism of the NSS in its current form due to its perceived inaccuracy in capturing the quality of teaching and the student experience. This is based on comments which identify low levels of engagement with the survey and the impact of negative comments from low attending students. The subsequent cluster includes the words; **lot**, **management**, **response**, and **changed**. This reflects comments which suggest that senior management has increased the pressure on teaching staff to produce higher NSS scores due to the emergence of the TEF and its potential impact upon student recruitment. The cluster in the middle includes the words; **sure**, **staff**, **different**, **university**, and **students**. This suggests an emerging dichotomy which is identified by respondents who suggest that an emphasis on student satisfaction rather than intellectual development has produced a noticeable change in senior management attitudes towards lecturers which increasingly positions them as service providers rather than educators. This is represented in comments which identify the emergence of marketisation and a change in student expectations since the rise in fees. The cluster on the left includes the words; **university**, **know**, **students**, and **well**. This relates to comments which identify a dichotomy between the understanding of students which universities have developed over many years, in what Morrissey (2015) describes as new regimes of performance. This is reflected in descriptions of students as customers. Comments which relate to these clusters include:

RS17: “In terms of the NSS... I think (long silence) I don’t think you’ve got anything better at the moment, doing the job that it’s doing, but there are certain legal cases where small grievances by students get blown up out of all proportion, because of the way the NSS is calculated at certain times of the year... And also conditions with small cohorts which make the results slightly unreliable... And there are issues around universities coaching students as to how they should complete the NSS...so it’s not always that reliable. It is the best system

we have, but perhaps it shouldn't just be done once at the end type of thing-rather as a continual data gathering process. In terms of attendance for example... Yeah that's happened all over we also have a big move to properly monitor attendance..."

This perception from a silver awarded university begins with a long thoughtful silence before the NSS is discussed. This is concurrent with several long pauses for thought within the research which also link to the TEF. There is criticism of the NSS in regards to its potential to create data which does not reflect the totality of the teaching experience and the different factors which are capable of influencing it such as a negative comments from students which may in some cases become exaggerated. However, the respondent does recognise that although the NSS may seem imperfect, it does represent the current system being used across the sector. There is criticism of the way in which the NSS only operates at certain times of the year and this refers to other comments which question why the NSS is only active in the final year ? There is also discussion regarding the impact of different size cohorts upon the production of data. This reflects Chen et al (2018) who discuss the improvement of negative sampling, and Littlejohn and Hood (2018) who discuss a crisis of identity in universities as well as new opportunities. Moreover, there is also a suggestion that the NSS encourages game playing as universities attempt to gain competitive advantage within the league tables. A closer method of monitoring the student journey is suggested.

RS20: *"The worst thing about the NSS is you've got three negatives only one positive so agree is fine agree and agree strongly but then if you have almost no opinion in the middle then it comes across as a negative can't have the Likert scale which has 1 to 3 is a negative and for five is a positive in the middle it's like no opinion say drop that out so it's just... It's just such a bad use of it... And in terms of statistics I've seen some bad feedback where you get a unit evaluation questionnaire... It's kind of modelled on the TEF... They are horrendous. You have 160 students and 29 and had students filled it in and the lecturer's got a low score and followed behind the benchmark they have been set but wait a minute is only 29 students so statistically this has no relevance... I've had a unit with five students on it... A very small unit and I was able to deliver on it and one student fed back that he wasn't very happy with it and that was terrible because statistically that really messed everything up (laughs). Instead of getting hammered by the students as we are now... lets introduce metrics where we the lecturers judge our line managers..."*

This perception from a silver awarded university provides a critical analysis of the NSS and its mechanisms from a lecturer perspective. The NSS is seen as being too weighted towards a negative outcome. Moreover, the Likert scale is also criticised due a perceived negative bias. There is mention of related aspects of data gathering in the form of unit evaluation

questionnaires - an example of the way in which a small number of negative comments are capable of influencing the outcomes of larger data sets. This is reflected by Leighton (2007) in regards to collecting and analysis data in the service of an interpretive approach. This point is emphasised through an example of how one negative comment within a cohort of five students created a noticeable impact upon the respondent's NSS score. This is reflected in the respondents sense of frustration over one negative comment from a student which may have occurred due to other contributing factors. Moreover, this reflects Glinka and Hensel (2017) who suggest that the relentless pursuit of improvement is capable of producing a sense of helplessness amongst bureaucrats. An expectation of chastisement for a low NSS score is expressed, as well as a humorous request for metrics which also measure the effectiveness of management. A link between the NSS and the management of metrics is reflected in the following comment:

RS23: *“It’s happening already...it’s possible to see that universities are becoming familiar with the metrics and how they can be worked...game playing...influenced by competition and the marketisation of the sector.”*

This perception from a silver awarded university suggests that the pressure of competition within the higher education sector encourages game playing with metrics in order to improve organisational competitiveness.

4.5 Edge of Chaos

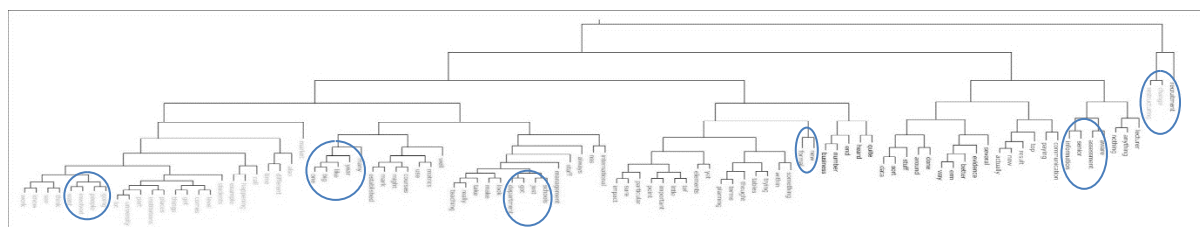


Figure 4.7: Investment curve:

The first cluster on the right contains the words; **recruitment**, **change**, and **restructuring**. This reflects comments from respondents which suggest that the sector is being driven to momentous change. This reflects Knights and Clark (2018) who argue that a state of anxiety is evident amongst academics and that the sector is currently on the edge. This links to comments from respondents regarding the fact that an increased investment in estates is apparent across the majority of campuses has also caused upheaval and disruption. The following cluster contains the words; **aware**, **assessment**, **sector**, and **information**. This refers to the respondents awareness that the higher education sector is now driven by metrics which have the capacity to reduce or elevate positions within the market. Traditionally, this

information has emanated from the Higher Education Authority (HEA), Times Higher Education (HE), or the Sunday Times university league tables. This information has now been supplemented by the on-line think-tank *WONKHE*. The subsequent cluster contains the words: **particular**, **sure**, and **impact**. This refers to the effect that any investment might have on the standing of any university and its capacity to attract potential students. This reflects Thomas (2012) who suggests that business schools are entering a period of transition. This is linked to a sub-cluster which includes the words: **tef**, **little**, **important**, and **point**. This reflects comments which suggest that the impact of the TEF awards in 2017 has little impact upon investment strategies, although in the long this may be another matter. The cluster on the left includes the words; **schools**, **just**, **got** and **department**. This denotes comments which relate to the impact of the investment curve on the landscape of universities and the new buildings and departments. The next cluster contains the words; **many**, **year**, **big**, and **one**. This reflects comments from respondents in regards to the longevity of policies such as the REF and the TEF, and the fact the increased levels of pressure in the sector are set to continue in the same way as this year. The final cluster includes the words; **going**, **people**, and **involvement**. Investment in estates as a priority within the data also suggests the presence of strategies which include increased administrative duties for academics and a reduction in staff. This is reflected in Holland (1992) when discussing the impact of complex adaptive systems, in this case seemingly small decisions regarding where to invest within the university which are capable of creating chaos and uncertainty. Comments which relate to these clusters include:

RS17: *“I recently attended a job interview at another university and I was advised by a colleague that I should make sure that I knew as much as possible about the TEF. I have also heard from others that the TEF is now being written into new lecturers contracts in some universities... this brings into play performance related issues and a change in sector practices”*

This perception from a silver awarded university suggests that following the TEF awards in 2017 there is a new level of response developing as universities prepare for the subject specific TEF in 2020. This is reflected in the knowledge which has been acquired through a collegiate network which identifies that the TEF is becoming increasingly embedded in university employment mechanisms. Moreover, this occurrence may be linked to CAS theory as an example of how a seeming small events are capable of generating complexity and influencing organisational change.

RG25: *“It seems as though some institutions have really tried to go for gold TEF’s while others have aimed for silver as a starting point in order to help them understand how the whole thing works first time around. We have brought in bursaries for students who can travel for any reason to Europe on an educational trip... No questions... You can just go... You can go look at archive in Florence... Just provide a justification and we will give a certain amount to that student to make it happen we also double that if a student wants to make an educational trip this long haul... So if you going to Australia, Thailand or America... Then, you will get a bursary to pay towards that trip... And some people can do the whole gig within the envelope (within the bursary) and it’s for reasons like that our university’s got TEF gold... As well as an amazing employability record which is staggering... So, what’s interesting... Is that these are all stories told about the institution by itself... So in this university it is true but I’m sure that will we move to the next level of assessment were going to find that some people have been stretching the truth...so, you know... I think... The thing I’d say as a sort of installation statement is... An a priori statement is the impact that the TEF has had on REF... The TEF/REF dynamic... Because all of a sudden you’ve got a potential source of embarrassment to the Russell group of institutions because since the TEF’s were awarded recently that has been the case... The thing is... That I think a lot of people didn’t take it (the TEF) as seriously as they may have done... But boy! When the proof of the pudding came to the eating they did... And now they are upset. So it (the TEF) is going to cause changes... I think.”*

This perception from a gold awarded university provides an example of how an innovative response to changes within the higher education sector resulted in a gold TEF. This reflects Pylak (2015) who argues that innovative processes provide the opportunity to break out of path dependency. However, others such as Milivojevic (2017) suggests that there are still contradictions within organisations between discussing creativity in theory and stifling it in practice. The majority of respondents suggest that they are unaware how their own universities achieved their TEF award ? However, other respondents identify innovative leadership as a key factor in their universities success and their position within an *investment curve* during the emergence of the TEF. There is also evidence that the respondent is aware of the impact of the REF and the TEF upon the sector and how they are both capable of intruding significant change. This is comparable to CAS theory which identifies the penultimate moments in change as being the *edge of chaos*, while also seeing any accompanying *disequilibrium* as a precursor to change within a punctuated evolutionary process. In this sense, the impact of the TEF upon the existing hierarchy of universities is seen as a shock to the system and the cause of disequilibrium. Moreover, other comments suggest that emergence of a new higher education TEF premier league which is based on an America model.

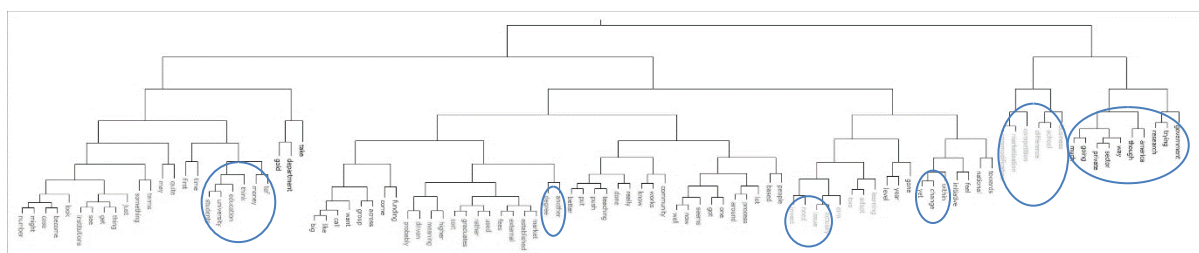


Figure 4.8: The influence of the American higher education system

The first cluster on the right includes the words; **government, trying, research, America, though, way, sector, private, going** and **much**. This reflects comments which suggest an awareness that the government is attempting to make the higher education landscape more competitive, in a manner which follows an established American model. This reflects Doyle and Brady (2018) who suggest that this changes in the sector represent an attempt to *reframe* universities. This includes a reduction in public sector spending and an increase in private sector involvement. This cluster identifies several key issues expressed within the research and touches upon issues such as the government's involvement within the sector, the implementation of the REF, the promotion of competition, and a move towards an American style educational system. This refers to Cummings and Kiesler (2005) who discuss the development of collaborate research projects which adhere to standardised international framework. The following cluster contains the words; **business, school, difference, competition, marketisation, and commodification**. This reflects Salmi and Saroyan (2007) who argue that league tables are now being used as policy instruments. Moreover, this point is developed by Rayment and Smith (2013) in regards to the future role of business schools as drivers of excellence. This continues themes previously discussed and reflects the specific changes which respondents have identified. Firstly, that the concept of the business school originates from America and in particular Harvard. Secondly, the importance of differentiation for universities in a competitive market in which the marketisation of the sector will depend upon the commodification of education into measureable, interchangeable, units.

This point is discussed by Schwier (2012) in relation to the corrosive influence of competition, growth, and accountability. The subsequent cluster contains the words; **actually issue, need, and invest**. This refers to comments which suggest that the government's policy of allowing universities to raise their fees is an important issue which has created the necessity to invest in order to function in a competitive market. The cluster in the middle contains the words; **new** and **degree**. This reflects comments which discuss the value of degrees within the context of massification and links to Salmi (2007) who discusses the challenge of establishing world class business schools, and in some cases new degrees such as those lasting two years, or those on line. The final cluster contains the words; **tef, money, think**,

university, and **students**. This refers to the TEF specifically and the additional income that universities need to generate in order to compensate for the reduction in government subsidies. This cluster also includes a request for more thinking time in order to manage change, and to improve response efficiency (Ntonia et al, 2014). Moreover, the relationship between universities and their students in an era of change reflects Cantley (2015) who states that the Newtonian paradigm may not be secure, and Isidori (2017) who argues for the stabilisation of nonlinear systems through innovation.

Comments which relate to these clusters include:

RS24: *“It feels as though someone over here may be looking at the practices within the higher education sector in America. There is now definitely a move towards a secondary school level and they need to have a nationally certified faculty education... And that means a core set of national standards. This is not compulsory and it’s above and beyond... And it’s meant to elevate those teachers above the head and shoulders of their peers... It’s not just enough that they’ve met their Department of Education respective States requirements... But they’ve also got a National Department of Education, who have a staff of approval...If you will...”*

This perception from a silver awarded university suggests that the United Kingdom is being strategically influenced by the American model of higher education which has been in place for twelve years, and this is also evident from respondent comments which refer to academics visiting American campuses and bring back American higher education practices. It is suggested that the American higher education sector has developed into a two tier system which includes private institutions and remains lacking in academic consistency. Moreover, there are parallels to be drawn between the development of nationally and international standardised educational systems and the aims of the TEF as expressed by the government.

RS24: *“I Think that there is always going to be a threat from the private sector, as there is so much money to be made and I think we’ve seen this as well in America with shall I say “fly by night institutions” which have been less than scrupulous. So I think that the draw for monetising education itself. I think that that is here to stay, but it’s whether these institutions get a foothold and I managed to carve a niche for themselves for the student bodies and the funding and find a position for themselves apart from the Russell group of institutions that adopted a “remain and see” strategy. With the technology coming to the forefront within education that I think is opened playing field and the question is how you monitor those institutions to make sure that they reach the required standards.”*

This perception from a silver awarded university suggests that there threat of competition from the private sector is based on the identification of lucrative opportunities. This relates to

Krell (2007) who suggests that business schools are changing due to competition. Moreover, evidence of this is based on the respondent's experience of the American higher education sector. There is reference to educational institutions in America which have not met the required standards, and a call for more regulation of a sector without comprehensive standards. There is an interesting point regarding where private providers might position themselves within the market which links to comments which suggest that the TEF is capable of facilitating a new league table which could potentially see colleges, private providers, on-line providers, and universities competing with each other. The "wait and see" strategy of several Russell Group Universities is also identified.

RS22: *"Well, if you look at the TEF legislation and the higher education bill...a lot of it was not necessarily the TEF, but about bringing in private providers and not only that...the government have actually stated in this legislation that they do foresee many people going under! And what the universities think...is that the government might actually starve them...and eventually they would go down...and that is part of the bigger picture of higher education...we are sadly, moving more and more towards the American Higher Education landscape where the traditional providers will no longer have that kind of security and safety that we have always, kind of had, we have always had that, kind of, safety belt that the government would come in and rescue us...so, that's gone now...and the government is willing now...whether it would allow a biiiggg (big) university to go under...that is a bigger question and I'm not so sure, but I can see that they would be more than happy to see some of the one's at the lower end of the table...that have consistently got er...garnered a lower student experience go...that might be possible."*

This final perception from a silver awarded university suggests that the TEF legislation has several elements which include bringing in private providers in order to reduce the size of the higher education market through competition. This reflects McGuffey and Robinson (2017) and their analysis of neo-liberalism within the Canadian educational system. Moreover, the respondent suggests that reducing the size of the market is the real reason behind the introduction of the TEF. This reflects comments which identify the presence of mergers within the higher education sector becoming increasingly noticeable. There is reference to the gradual removal of government grants and the transition to dependence of the market economy. The parallels with the American higher education system are underlined. The respondent questions whether the government would be willing step in to stop the closure of a large university, and also suggests that the smaller universities might be more vulnerable to mergers. In this sense the TEF is seen as a policy which will introduce a transition to the American model of higher education.

4.6 Summary

This chapter has analysed the data through the use of cluster analysis of respondent interviews, in order to explore a possible link between the TEF and CAS theory. Four CAS theory themes emerged during the analysis; emergence, adaption, signals and boundaries, and the edge of chaos. Each section contained two themes which were then analysed in detail in order to provide insights into business school responses towards the TEF. Moreover, comments from the respondents also identified the institutional level TEF behaving in a nonlinear, unpredictable manner, while also generating complexity within existing systems.

Chapter Five: Discussion

While reviewing the results from thirty respondents from ten universities across England, several important themes emerged. The focus of the research was to explore the response from business schools towards the TEF within the context of wider policy implementation and in the context of an assumption of autonomy. Therefore, the discussion section presents five themes which have emerged from the research, and these include; response, complexity, time factors, competition, and staggered progress. The following diagram illustrates the structure of the analysis in this section:

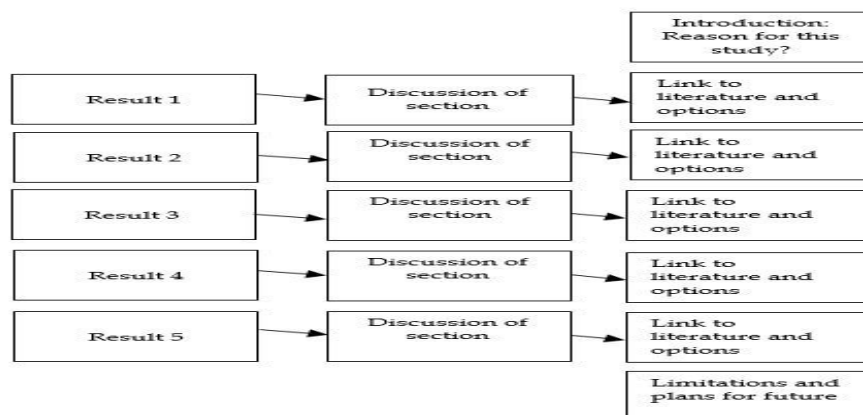


Figure 5.1: Discussion structure (Developed from Denzin and Lincoln, 2016)

5.1 Result 1: A theme of business school response towards the TEF

A key emergent theme was the response from business school to a significant educational policy. The data suggests that universities had to first decide whether or not to participate in a voluntary exercise or not? In each case, the response was left until the last minute, and the responsibility was passed onto one individual within each organisation, who reported to their Vice Chancellor, while also receiving support from a loose self-regulating group. The responses

were nuanced and depended upon the size of the university, knowledge of previous procedures, and the type of leadership. All the responses from business schools were within a hierarchical framework, except for the most successful response which involved innovative leadership, staff participation, and a significant investment in student choice. There was strong resistance to the TEF due to complaints regarding the manner in which the phenomenon of teaching, as well as suggestions that it would use competition to decrease the size of the higher education market. The TEF was seen as a centrally administrative bureaucratically orchestrated management exercise. Generally speaking, there were four types of response towards the TEF in 2017; Aiming for gold, aiming for silver, taking a chance on bronze, and none - participation.

Discussion of the section:

This theme revealed that within the universities, only one person was ultimately given the responsibility for delivering the response to the TEF. There were no formal TEF teams, and those with sole responsibility also completed several other tasks, which in some cases included completing PhD's. It was surprising to learn that the response to the TEF was only conducted by senior management, and that staff below that level were not involved. This suggests that a wealth of knowledge and experience regarding public and private sector practices was not utilised. The business schools did not act autonomously, but operated within the university's hierarchical structure, and their capacity to generate income during a time of reduced government grants was seen as their core strength. The manner in which the response to the TEF was ultimately left to the last minute reflects intense bureaucratic activity during the implementation period, which was connected to the implementation of the REF. There was also a noticeable difference between the response from the Russell group universities who placed more emphasis on their existing reputations, and the most motivated Post 92' universities which utilised an opportunity to elevate their reputations.

Link to literature and options:

An interesting element of the data was the way in which business school responses to the TEF exhibited similar behaviour, even when attempting to achieve gold, silver, or bronze (appendix 5). The response was also exclusively connected to senior management and one individual in each institution in particular. This reflects the manner in which individuals or *agents* acted during their response towards the TEF. Was this an example of how policies are capable of influencing flocking behaviour in organisations? Or within a wider context, society? These ideas were previously discussed by Waldrop (2002) when describing the early development of CAS theory and early computer simulations of flocking birds at the Santa Fe Institute which culminated in the term *boids* being developed in order to describe objects which remain at an

equal distance, which matching rapidity in a proximal mass. This also links to the concept of murmuration, in which Reynolds (1987) describes temporary coalitions of starlings that fly together in a noticeably fluid and flexible manner. Moreover, Rouse (2014) argues that such none-linear behaviour cannot be controlled by convention means, and therefore require innovative solutions.

5.2 Result 2: A theme of business school responses towards complexity

This theme suggested that there were already high levels of complexity within universities into which the TEF emerged. This included the high levels of bureaucracy which experienced surges of activity at the beginning of term, during examinations, and during the award process. Zizek (2017) argues that a pessimistic acceptance of chaos is a reality, and there was evidence within the data of complexity being caused by micro-management, and a noticeable increases in administrative duties for lecturers, which impacted upon their availability. A sub-theme of thinking time was also identified within the data and this includes thinking time for sense making of the TEF. There is evidence of complexity being generated by an increasingly apparent customer paradigm, the cyclical nature annual bureaucratic responsibilities such as the NSS, and the challenge of responding to complexity over long periods of time, within a *discontinuous* academic calendar and high levels of *staff kinesis*.

Discussion of the section:

The theme identifies universities as complex organisations which require significant amounts of time to process their academic awards. The operative procedure is cyclical, but each cycle includes additional inputs and irregular organisational change. There was an expectation in the research that the response from business schools would be absorbed into existing bureaucratic mechanisms, but these seemed to be overloaded due to existing levels of bureaucratic activity and the implementation of the REF. The response to the complexity was most successful with small to medium size universities, where there were shorter lines of communication between staff, and contact time with students. The most successful universities either had previous knowledge of procedures, or set the most innovative agendas and did not wait, or approach the TEF unprepared.

Link to literature and options:

It may be suggested that in previous years organisational management has focused on modernism and positivism as its dominant characterisations. However, in the latter part of the twentieth century new approaches have begun to be explored. Stokes, (2011) suggests that such example comes from the development of computer science and quantum physics and the impact of these theoretical changes is now felt within the realms of critical management

studies. The study of complexity within organisations over time has been explored by Kirby-Harris (2003) in this study of Namibian universities over eight years. This includes the longitudinal effects of educational policies and the manner in which they are capable of increasing or decreasing activity within any higher education sector? This also includes reference to the numerous responses which were necessary in other deal with emerging complexity. This reflects the way in which universities in the sample were, in many cases, still responding to complex policies which had been introduced decades ago. Moreover, Taylor (2006) argues that an increase in student numbers within a study of four universities, indicated that academics were encouraged to take on more administrative roles as a result of emerging complexity.

5.3 Result 3: A theme of business school responses towards competition

Another emergent theme was the relationship between business schools and organisational change. This included significant re-structuring of both departments and faculties, as the universities attempted to re-position themselves in an increasingly competitive higher education market. A sub-theme includes the impact of these upheavals upon the learning environment and in turn the impact of content delivery. There is evidence that the scale of organisational change has had an impact upon the student experience due to investment in estates which requires considerable restructuring. This theme suggests that business schools are responding to the latter stages of massification, within a sector which has evolved through significant legislation such as the Education Reform Act (1988) which introduced marketisation and competition into the sector, and the Further and Higher Education Act (1992) which provided thirty five former polytechnics with the opportunity to become universities. These policies also represent the starting point for business schools to compete against each other for customers rather than students. Furthermore, the TEF provides the opportunity for more private sector business schools to enter the market.

Discussion of the section:

This theme identified that business schools have had to respond to organisational restructuring in the same manner as other departments within the university, and are therefore not autonomous, or unaffected by strategic planning. Moreover, since the Further and Higher Education Act (1992) a new group of business schools has entered the higher education market and therefore the established business schools within the Russell Group have had to respond to an increased competition for students. In this sense the TEF provides an opportunity for business schools from Post 92' universities to compete with established business schools.

Another surprising fact was that the business schools within the sample did not set the agendas during times of organisational change and were in fact part of a centralised and process which dictated their strategic direction. The data also suggests that business schools have now become important generators of income for universities following the decision to reduce government grants to higher education. This also reflects comments from respondents which suggest that there are now too many MBA's within the market and that more practical business qualifications should also be introduced.

Link to literature and options:

Increased competition within the sector has also introduced new methods of delivering education through on-line courses, as well as a move towards considering two year degrees. (BIS, 2016). Moreover, Carter and Curry (2011) argue that the increase in competition within the sector has also introduced a dilemma for universities as they consider their price structures in comparison to other universities. Moreover, Barber and Upadhyay (2014) discuss the impact upon higher education in Indian markets and in particular the differences between the private and publicly funded universities. This reflects the competition which is thought to exist within Russell group and Post 96' universities in the United Kingdom. However, the emergence of the TEF has changed this dynamic, although some critics maintain that this is only a temporary situation until game playing restores the established hierarchy. Mintzberg (2014) also criticises an overabundance of MBA's in the sector and calls for more practical applications of managerial processes.

5.4 Result 4: A theme of business school responses in relation to time

A further theme which emerged when considering the response from business schools to the TEF was that of time factors. This included in the first instance, the timing of the TEF and the manner in which it followed a previous educational policy, which was in this case the REF. There were also other elements to this theme which included the time taken to administer bureaucratic responses to matters such as enrolment, examinations, and awards. Moreover, there was also evidence of an increase in time demands upon lecturers from a variety of areas. These included an increase in time for administrative duties, more time for requests from students for one-to-one or small group engagement, time for staff assessment procedures, as well as time required for training sessions, unit leadership, programme leadership, and open days. Therefore, any response to emerging complexity from educational policies such as the TEF operated within a limited time frame due to the existing demands on time from several other areas.

Discussion of the section:

This theme identified time as an important factor during the response process, and that the response to the TEF by business schools was postponed in the majority until the last moment. Moreover, the data suggest that individuals who were given the responsibility of responding to the implementation of the TEF, also had limited time commitments to other duties. A surprising sub-theme of *thinking time* became apparent within the data, which identified an important aspect to higher education involves time which is spent in consideration of concepts, content preparation, duty of care, and associated academic procedures. There are also numerous reports from respondents which expressed that the response to a previous educational policy was still on-going during the emergence of the TEF. Within this context, the theme of limited time frames may also be extended to the government processes through which the TEF was developed. This includes consultations, amendments, and the complex legislative processes of the state. In fact, one major criticism from respondents centred on the fact that business schools were responding to an educational policy which was hastily constructed and appeared to be an inaccurate method of measuring the phenomenon of teaching.

Link to literature and options:

Martin (2011) discusses the time factors involved during the implementation and continued participation in the REF. This includes criticism of the way in which it has become more complex, and the way the subjective term *impact assessment* has been added. In contrast, Mayer (2003) explores the notion of quality of time, in relation to student engagement with different methods of content delivery. Interestingly, this provides a different perspective upon the teaching experience and illustrates the additional time which lecturers may need to spend with their students to achieve the most effective cognitive results. This is apparent when comparing the results of face-to-face, course discussions, and end of course evaluations. The emerging themes from this research include the *expansion of time* and a *richer experience of time*. This is reflected in previous research by Fisher (1978) which discusses concepts relating to time allocated to students and the possible impact of more teaching time being spent on student activities, a theme which is still relevant today.

5.5 Result 5: A theme of business school responses to processes

The final theme draws together all the previous themes responses from business schools towards the TEF, complexity, competition, and time factors. It is interesting to note that all the previous themes all operate within staggered processes, in a relationship where there are irregular stops and starts. One example of this is the manner in which activity surrounding the TEF stopped immediately following the awards. Moreover, there were other aspects which related to members of staff feeling excluded from the response process, which for them never

began. There were other themes which identified stops and starts during the response process, and these includes changes in management, retirement, in introduction of new technology, extensive building work, seasonal illness, mental health issues, and union activity. These examples within the data which also identifies short term staggered processes which impact upon universities on an *irregular* basis. In a wider sense, there is evidence of staggered progress due to the long term influence of previous educational policies over years, or in some cases decades.

Discussion of the section:

This theme identified that there were several reasons which may account for irregular stops and starts within higher education organisations. In contrast to organisations within the private sector which operate more or less consistently throughout the year, organisations such as universities operate within a framework which includes several stops and starts. This also includes noticeable periods of intense bureaucratic activity at certain times such as at the beginning of term, before and after examinations, and responding to a new customer paradigm. This means that dealing with competition from other business schools, problems with staff, or the implementation of policies, all occur within a punctuated framework. This is also reflects respondent comments which suggest that internal policies are also often incomplete due to these factors. In a wider sense, the data suggests that universities do not evolve over time, but following sudden dramatic changes within the higher education sector. This is evident when mapping the historical development of the sector and the manner in which it has been expanded to its present state. In this sense, the development of the sector may be seen as being an example of punctuated equilibrium.

Link to literature and options:

Gould and Eldredge (1972) argue that evolution occurs through a series of dramatic stops and starts over time, and that during such occurrences cause significant change. The time in between these momentous changes is called *stasis* or a static state. This idea has now been adopted in management literature and forms one method of understanding the significant changes which occur in organisations over time. Therefore, this assumption may be linked to the effect of educational polices which have sought to either limit or increase the number of educational institutions, as well introducing fees, and increasing them. The latest iteration being linked to inflation. However, other such as Maynard Smith (1983) argue that evolution is caused by *discontinuous variation*, a process whereby species stop developing in a way which allows other species to prosper, while Phillimore and Price (2008) suggest evolution involves a split into two distinct species, and Cortes (2018) believes that evolution is driven by natural

disasters. Taking these theories into account, the theory of punctuated equilibrium appears to most closely reflect the evolution of universities when the impact of policies is factored in.

5.6 Comparison to the introduction

The introduction to this thesis discussed the exploration of business school responses to a significant educational policy. This was explored in the research complexity theory was used as a theoretical lens in order to approach the topic from an alternative perspective which sees organisations not as machines, but compares them to shifting, none-linear organisms which respond to dramatic change, in way which leads them to the edge of chaos. However, the research also provides possible solutions for such situations, and celebrates such states also containing opportunities for innovation and cooperation. The research investigates the impact of policies such as the Institutional level TEF and its predecessor the REF as examples of punctuated equilibrium, and provides through a discussion on *clockware* and *swarmware* a method by which a response relationship which includes alternating between management structures and innovative suggestion from staff can co-exist. Importantly, the research provides an opportunity for those who were excluded from the response process due to time constraints, express their innovative solutions in the manner of swarmware. This research also provides advice for business schools as they begin to organise themselves for the subject specific TEF in 2020.

The limitations of this research include the use of qualitative analysis which focussed on a subjective interpretation, which could have been qualitative or utilised a mixed methodology. Due to the sensitive nature of the subject matter it was only possible to gain access to a mixture of respondents, rather than the respondents who had been given the responsibility to organise their university's response to the institutional level TEF in 2016. Therefore the sample includes respondents who were given this role, members of loose self-regulating teams who supported them, and members of staff who were willing to offer their observations from what they perceived to be, a position of exclusion. Due to the time factors involved in completing doctoral study in addition to full-time teaching commitments, as well as studying for a doctoral qualification concurrently at another university, the sample was limited to thirty respondents from ten universities across England. The use of snowball sampling meant that the majority of the sample may have held similar views on the topic, although this was not always evident as the respondents usually chose the next respondent at random depending on who was sharing their office or who was available. More aspects of this will be discussed in the following section.

Chapter Six: Implications and recommendations

This section examines the implications of the research and provides recommendations for business schools in regards to the future management of the TEF. The first part of the analysis is based on perceptions from respondents which represent *swarmware*, the views of staff excluded from the response process, but who nevertheless offered solutions towards more effective responses in the future. The final section provides the *swarmware* aspect of the research in which the members of staff who were not involved in the response to the TEF offer their solutions in regards to how the educational policy their university is responding to could be improved. This section begins with a diagram of the TEF in order to provide the reader with an overview of this complex mechanism.

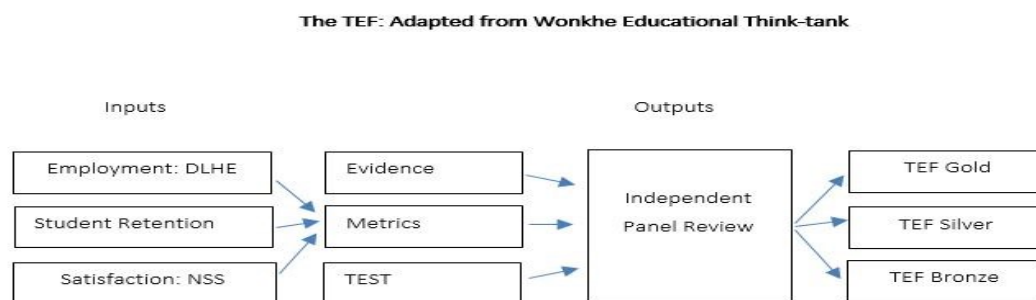
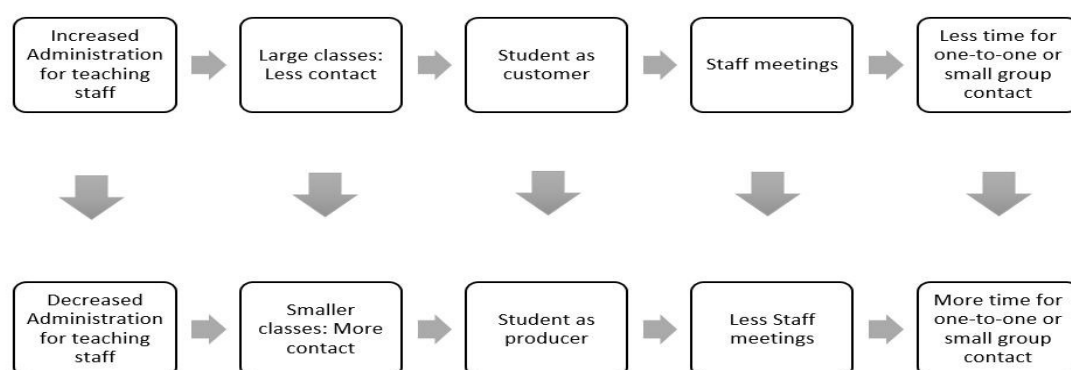


Figure 6.1: The TEF Model and its interconnecting aspects



1. Decreased administrative duties for teaching staff
2. Smaller classes
3. Student as producer
4. Less staff meetings

5. More time for one-to-one or small group contact

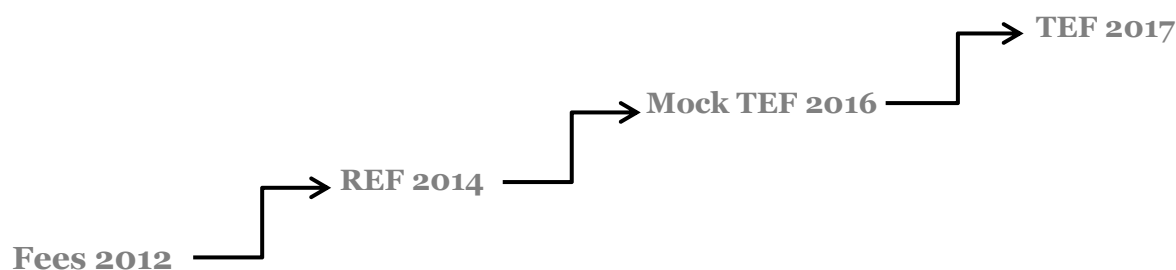
Figure 6.2: Recommendations for improving responses towards the TEF



1. Innefectual decision making
2. Brain-storming and dialectical enquiry
3. Intuition
4. Muddling through
5. Disintergration and anarchy or avoidance
6. Search for errors
7. Unprogrammable decision making “outcomes” rather than solutions
8. Identification, development, and selection
9. Agenda building

Adapted from Zimmerman (2011) and Stacey (2002)

Figure 6.3: Strategic choices at the Edge of Chaos



Equilibrium.....

Figure 6.4: A comparison of equilibrium and punctuated equilibrium concepts in relation to the evolution of Higher Education 2012-2017.

This diagram illustrates the difference between the concept of equilibrium and *punctuated equilibrium*, with the main difference being that an evolutionary process is seen as consisting of dramatic stops and starts rather than continuous development. In this example, key policy changes are identified as dramatic moments within the evolution of higher education, beginning with the increase in student fees in 2012. This is followed by the implementation of another significant policy which has changed the higher education landscape. The Times Education Mock TEF in 2016, is also included here as it created a significant murmur within the sector due to the fact that several historic research universities did not score highly in contrast to a small group of Post 92 universities which received higher hypothetical awards. Finally, the TEF in 2017 created a new hierarchy amongst universities which has been compared by one respondent to the Premier League in football. Therefore, it may be suggested that these dramatic moments represent an example of punctuated equilibrium in action.

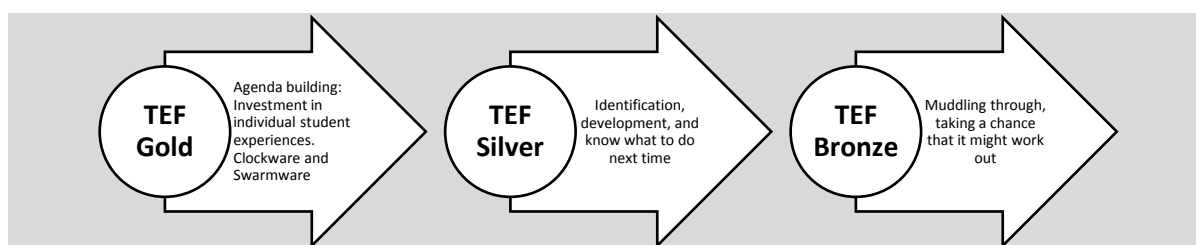


Figure 6.5: Business School responses towards the TEF in 2017

Building on Zimmerman's Edge of Chaos theory (2011) developed from Stacey (1999), the data suggests that the business schools which responded most successfully to the TEF within the sample, were those where leadership chose agenda building rather than attempting to analyse how the TEF might work, or attempting to muddle through the experience. This is reflected in ideas such as bursaries for students to travel and to any destination of their choice for educational purposes - a focus on the students freedom to learn independently. Furthermore, comments suggest that the most successful examples of leadership within the sample were also willing to switch between the alternate use of *clockware* and *swarmware*. Clockware when working in a hierarchical and structured manner, and swarmware when listening to innovative ideas and abstract problem solving from members of staff.

Chapter Seven: Contributions and Conclusion

The researcher has investigated the perceptions from business schools towards the institution level TEF in 2016. In doing there has been an attempt to provide a deeper understanding of how the universities respond to the implementation of government policies within a wider

context in order to inform future business school practices. The use of a qualitative approach enabled an exploration of respondent views and allowed the respondents to tell their story. Moreover, since the respondents were from different levels of senior management and administration, their views constitute a *panopticon* (Stokes, 2011) which offers multiple views. The research question asked;

“To what extent can the Teaching Excellence Framework be identified as a Complex Adaptive System?”

The Teaching Excellence Framework (TEF) is identified within the research as a Complex Adaptive System (CAS) due to the presence of several attributes which correlate to the description which provided by the practitioners of the theory such as Axelrod and Cohen (2001) who suggest a CAS contains several of the following characteristics:

“The behaviour of the ensemble is not predicted by the behaviour of the components. They are adaptive in that the individual and collective behaviour mutate and self-organize corresponding to the change-initiating micro-event or collection of events”.

The data suggests that none of the respondents understand how the mechanisms of the Institutional level TEF operate, or how the constituent parts are capable of producing unpredictable results. The general consensus within all the respondents in the sample is that they do not know how their respective universities achieved their particular TEF gold, silver, or bronze awards? However, several of the institutions are pleased with the outcome of their awards, which have either elevated their University, or maintained their reputation and status. There is evidence of adaptive behaviour within the respondent comments as they report that their particular universities have attempted to understand the requirements of the TEF. The evidence suggests that universities have responded to the TEF in a manner that mutated in different ways during the process. Beginning with *individual behaviour* as one person within each university was given the responsibility of managing the response to the TEF, and developing into *collective behaviour* while receiving assistance from loosely formed *self-organised groups*. According to CAS theory, such activities only occur in reaction to the presence of a micro-event or collection of events. Moreover, the universities also acted on an *individual level* and later on a *collective level*, as information on the TEF was exchanged within collegiate networks, discussed in Facebook groups organised by lecturers, and at national and International events such as conferences. In this sense the TEF may be seen as *change-initiating micro-event* which is responsible for causing large scale change within the Higher Education sector in a way that is not predictable. The TEF as a policy, may also be seen as a *micro event* within universities as well as generating a *collection of events* as the policy culminated in the TEF awards in June 2017.

“The number of elements is sufficiently large that conventional descriptions cease to assist in understanding the system.”

This CAS terminology is linked to the respondents comments as they attempt to describe the TEF. The research suggests that due to time constraints and existing bureaucratic responsibilities, the response to the TEF in each university was conducted by one individual, reporting to their respective Vice Chancellors, who received support from a loosely organised self-regulating group. Due to this response, the majority of teaching staff in all the universities within the sample, were unable to describe the workings of the TEF in any detail and reported feeling overwhelmed by the unexplained complexity within the policy. Furthermore, the literature provided by the government was not made available to the staff due to time limitations and the necessity to complete previously existing complex tasks such as faculty restructuring and the implementation of the Research Excellence Framework (REF). However, a minority of respondents reported that they were able to draw upon knowledge from the HEA website and the *WONKHE* Education think-tank, as well as previous knowledge of responding to the QAA when they had the time to do so. There were a minority of respondents from computer or engineering backgrounds who understood the mechanisms of the TEF in a more detailed level, but the overall lack of information on the TEF and the lack of involvement below senior management level meant that the TEF remained an unknown quantity.

“Any element or sub-system in the system is affected by and affects several other elements or sub-systems.”

The TEF consists of several elements which form a complex adaptive system, and each aspect is capable of affecting other existing systems. This is expressed by respondent comments which suggest that parts of the TEF such as the National Students Survey, are capable of affecting several associated variables within the TEF such as managerial procedures and the student's union, for example, who have suggested that students should boycott the NSS or leave low scores in the survey in order to curtail any further rises in student fees. The TEF represents a new system which has emerged amongst multiple existing systems within the universities. The comments from respondents who are experienced researchers or statisticians, suggest a dissatisfaction with the TEF in its current form and its associated systems such as the NSS. The NSS is also exhibits the characteristics of a CAS.

“The interactions are non-linear: small changes in inputs, physical interactions or stimuli can cause large effects or very significant changes in any outputs.”

The research suggests that the TEF behaves in a manner which is non-linear due to a lack of focus within its metrics in their current form. Moreover, inaccurate metrics within the TEF are capable of causing significant change. For example, in elevating the reputations of some universities and devaluing the reputations of others. In the long term, the TEF as just one policy, may be responsible for a significant change in the higher education sector, by influencing the mergers and privatisation. Comments from respondents also suggest that the TEF may be responsible for a reducing the size of the sector and *in extremis* causing some universities to close. The operation of the TEF also includes *physical interactions*, which include policy makers who are responsible for developing the TEF as well as the administrators, lecturers, and students who all subjectively interact with the policy as stakeholders. The data suggests that the TEF represents a mechanism which seeks to measure the phenomenon of teaching in order to develop education into standardised interchangeable units, which are capable of becoming part of an International education system. Moreover, the data also suggests that the TEF has acted in a *non-linear* manner and disturbed the existing equilibrium within the Higher Education in a way that represents the behaviour of a CAS. Within this context, the TEF may be linked to other CAS related theories such as *punctuated equilibrium*, which suggests that evolution does not occur incrementally, but rather by dramatic stops and starts over long periods of time.

In keeping with the research question, aim, and objectives, the researcher explored the extent to which the TEF may be identified as a CAS and identified several examples which suggest that this is the case. The researcher compared business school perceptions towards the Institutional level TEF. This was achieved through data gathered from thirty interviews with respondents from ten universities across England. In keeping with the four objectives, the researcher identified the presence of the TEF within business schools, established business school responses towards the TEF, evaluated the extent of business school responses towards the TEF, and developed a framework which improves the management of the TEF. The sample includes members of staff at senior levels within both Russell group and Post-92 universities, and this also includes institutions of varying size. Moreover, a richness within the data was provided through the comments of educational professionals with varying levels of experience within Higher Education, which contribute views from the Russell group, Post 92' universities, and experiences in the private sector.

CAS theory was utilised by the researcher as a theoretical lens in order to explore the emergence of a significant educational policy and its possible development into a subject specific format. Although this point remains under discussion, insights for managers dealing with the prospect of a subject specific TEF in 2020 are included. The use of CAS theory within the research provided an opportunity to reframe uncertainty into a positive space in which

innovation must occur. Moreover, in contrast to Newtonian physics which focuses on equilibrium, CAS theory sees equilibrium as a negative state and instead celebrates disequilibrium and a lack of control as being part of an evolutionary process. Therefore, CAS theory provides what one respondent calls a shifting sands approach to management which includes identifying the element which is creating the complexity (Holland, 2012). This is also comparable to Zimmerman (2012) in relation to the improved management of complexity within healthcare organisations in America, which may prove useful as the higher education sector moves towards a similar public and private model in the next few years. The data suggests that the most successful business school response to the TEF within the sample came from a Post-92 university which elevated its position and achieved excellent results through the alternation of *clockware* and *swarmware*. This involved a call for innovative action within the zone of complexity which in this case included creative leadership, and an alternation between managerial practices and innovative suggestions from staff. Therefore, this university's actions provide an example of *mutual agenda building*, which in this case resulted in an investment in worldwide student bursaries for educational travel. This innovative solution contributed to significant increase in student satisfaction, produced a successful response and resulted in TEF gold.

Table 7.1 Research question, results, and conclusion : (developed from Saunders et al, (2012))

Research question	Results	Conclusion
To what extent can the TEF be identified as a Complex Adaptive System?	The Institutional level TEF is identified as a complex adaptive system, which is none-linear, unpredictable, and containing self-regulating agents, which are capable of creating disequilibrium within universities and leading them to the edge of chaos. Managerial practices (<i>clockware</i>) are based on achieving equilibrium and machine like efficiency, whereas alternating between managerial practices (<i>clockware</i>) and the innovative problem solving suggestions of staff (<i>Swarmware</i>) provides a method of managing uncertainty and seeing it as a potentially positive state.	Alternating between <i>clockware</i> and <i>swarmware</i> creates a positive relationship between management and staff with each understanding each other's point of view. This provides an inclusive method of managing complexity and organisational change, which draws upon both managerial practices and the innovative suggestions from those who might otherwise have been excluded from the process. The response to the TEF in 2017 from business schools, only utilised <i>clockware</i> due to the time required to manage the punctuating effects upon equilibrium from internal and external policies.

--	--	--

Figure 7.1 Figure 7.1 wider strategic action points

1. Introduction to Complex Adaptive Systems theory:

An action point which introduces Complex Adaptive Systems theory and suggests that it represents an emerging scientific paradigm within change management, which is capable of improving the management of complexity in organisations. The presentation begins by focussing on the BACH Group within the Santa Fe Institute, New Mexico, which operates as a none-profit, independent research center and loosely structured collection of interrelated scientific disciplines covering ecology, economics, computer science, and chaos theory. The BACH Group represents an acronym for a group of notable scientists. This includes Alfred Burke (1915-2008) a mathematician and developer of the first general-purpose digital computer. Robert Axelrod (1943-) a political scientist and developer of game theory, as well as the evolution of International cooperation and schema theory. Michael D. Cohen (1945-2013) who developed information systems, public policy, and computer modelling. This group was completed by John H. Holland (1929-2015) who contributed to the development of complexity, agent modelling, signals and boundaries, and edge of chaos. The aim of this presentation is to deconstruct the notion that hierarchical interventions are not the only way to manage complexity within organisations and draws upon related CAS theories based on disequilibrium and none-linear activity, as well as the ways in which complexity develops within organisations such as universities over time and through seemingly simple beginnings. Therefore, this action is capable of introducing both staff and senior managers to a strategic action point which provides a new paradigm within business schools which is capable of introducing a new perspective on the management of organisational change within organisations such as universities.

2.Introduction to Punctuated Equilibrium:

An action point which explores the historical evolution of educational and their long term impact upon higher education from a fresh perspective. This approach is utilised in order to explore the relationship between political dialectics and the introduction of educational policies which emerge from the ambitions of competing political paradigms. In contrast to traditional approaches towards evolution, the theory of *punctuated equilibrium* promoted by Eldredge and Gould (1972) who question the Darwinian notion of gradual evolution and identifies what they believe to be dramatic, punctuated leaps which propel evolution forward on an unpredictable timeline. The theory of *punctuated equilibrium* is then used to discuss

two recent examples within British universities where two educational policies have propelled the evolution of the sector forward. This includes the Research Excellent Framework (2014) and more recently the institutional level TEF (2016). In this sense, *punctuated equilibrium* is introduced as an alternative approach to managing change. To illustrate this point, the presentation draws upon research within the thesis which explores previous policies from the 1960's onwards, which have been implemented by successive governments in order to dramatically limit or expand the parameters of higher education. Moreover, the conclusion of this action point informs the staff that they are operating within new educational parameters, which include the rise in university fees (2012) as well as the expansive ambitions embedded in the institutional TEF (2016) which invite an increased participation from the private sector. The point being, to enable the staff to contextualise their seemingly unpredictable teaching environment in preparation for the TEF at a possible subject specific level. In this sense, *punctuated equilibrium* is suggested as an alternative approach to the quest for organisation equilibrium, in that it suggests that organisations develop through responses to unpredictable, dramatic events. Therefore, this action plan develops an awareness of an alternative form of equilibrium which may assist both senior managers and teaching staff to adopt a broader view of organisational change within their university.

3. Understanding Institutional and Subject Specific TEF:

An action point which is based upon the introduction of the Institutional level TEF (2016) and the findings contained within the researcher's doctoral thesis. This includes the main points which were raised by thirty respondents from ten universities across England. The data includes insights from senior managers who oversaw the completion of the institutional level TEF applications as well as their perceptions of the complexity which the emerging institutional level TEF introduced when combining with existing bureaucratic mechanisms. The sample of universities also includes perceptions from both Russell Group and Post 92' universities. It became clear during the collection of data, that the majority of teaching staff were unaware of the mechanisms of the TEF and not involved in the response process. This was left to one member of senior management in each university who was supported by a loose self-regulating group. This pattern is presented to staff as an example of *flocking behaviour* - another theory which is connected to Complex Adaptive Systems theory. There is also reference to the transition from an institutional level TEF to a subject specific TEF as the policy develops further. This provides an opportunity for staff to learn from the insights of the respondents within the thesis. These include, being aware of the challenge of measuring the phenomenon of teaching at different size universities, at different times of the academic calendar, when teaching different subjects, and in different teaching environments. Narratives from the research are presented in an anonymous form. They suggest that a gap has emerged

between senior management and those delivering the content. This includes anecdotes from members of teaching staff who have previously worked in the public sector, who recognise that the subject specific TEF in 2020 is moving towards an American model, which has itself been criticised for being unsatisfactory. The point being that the TEF represents a complex mechanism which is capable to re-shaping the higher education sector and that the formation of specific TEF teams is already underway in several competing universities.

4. Understanding institutional and subject levels of TEF:

An action point which links CAS theory to the Institutional-Level TEF and then Subject-Level TEF in order to inform staff of the possibilities an alternative theoretical approach can provide. This includes comparing CAS theory to existing methods and Marxist inspired perspectives of organisational analysis such as a Gramscian approach with focusses on *hegemony*, a Foucauldian approach which focusses on the discourse analysis of power relationships or the research of Manfred Kets de Vries on leadership from a Post-Freudian perspective. This includes reference to work of key thinkers within CAS theory such as the BACH Group at the Santa Fe Institute, as well as work which has influence them, such as Turning's paper on *morphogenesis* (1952) which observed the infinite combination of patterns on cattle from a genetic perspective, to the work of Craig Reynolds (1986) in his computer simulations of flocking birds (boids) and their self-regulating, seemingly leaderless, method of problem solving...which direction to take? Within this context, members of staff are encouraged to explore CAS theory as an emerging scientific theory from 1980's America which represents a *shifting sands* approach to organisational change (in contrast to a hierarchically implemented approach), which celebrates the opportunity for a symbiotic relationship between management and staff creativity during times of perceived uncertainty. Particularly when policies seem to push organisations into a *zone of complexity*, or as it is also called... the edge of chaos. In response this, the presentation provides an opportunity for members of staff to understanding the ways in which policies such as the TEF emerge and generate complexity within organisations such as universities at institutional and subject level, and how an alternating relationship between senior management and staff creativity can surpass such a situation. Therefore, this action encourages a synthesis of creativity and managerial structure with can be used to improve the management of the institutional level TEF, or its possible development into a subject specific format.

5. Listening to the Shadow System: Learning from staff:

An action point which introduces members of teaching staff to the concept of the *shadow system*. This theory emphasises the importance of the meta narratives and informal problem solving conversations which occur every day in the work place, which form an invaluable sub-

text which seeks to adapt to organisational complexity. The importance of the shadow system is discussed by Zimmerman (1999) in her work on complexity within the Health Care Sector in America. The shadow system includes the informal conversations, which occur in offices, corridors, kitchens, and water coolers. The shadow system for lecturers includes criticism, gossip, and rumour as well as an awareness of the shadow system of students. There is evidence of a richness of problem solving narratives within the respondent's shadow system, which reveals a sophisticated level of inter-connectivity between university lectures in the same organisation, as well as their links to other universities, private sector contacts from previous employment, and inter-connectivity through Facebook groups, and educational think-tank's such as WONKHE which have played a significant role in disseminating information on the institutional TEF and the proposed subject specific TEF. This relates to Cunliffe (2011) in her work on social constructionism. The most poignant comments within the respondents shadow system came from teaching staff who had previously worked in the public sector. Their insights suggest that the TEF represents an educational policy which is designed to reduce the size of the market through competition and in particular greater access for the private sector. Members of teaching staff can thus be made aware of their future role within a business model based which is moving towards the American model. The shadow system may often seem paradoxical, but according to Zimmerman contains a richness of innovative problem solving material which senior managers can then draw upon when facing any complex impasse. Therefore, this action encourages a synthesis of creativity which introduces the possibility that staff creativity and a hierarchical managerial strategy which can work together to improve the management of the institutional level TEF, or respond to the TEF's possible development into a subject specific format.

6. Emergence, adaption, signals and boundaries, and the edge of chaos:

An action point which introduces members of staff to the four key areas of CAS which have provided a core structure within the researchers, doctoral thesis. The four areas are drawn from the work of one of the two main academics within the research – in this case, Professor John H. Holland (1929 - 2015). The staff will be informed that the work of John H. Holland was chosen from within CAS theory due to his concerted effort to make CAS theory more accessible. In the first instance, members of staff are made aware that Holland (2012) argues that the process for understanding complexity is dependent upon “identifying the buzz”. Within this context, members of staff are informed that the researcher has identified the presence of the institutional level TEF as a potential cause of complexity. Following this, members of staff are introduced to four areas of CAS theory which can be linked to an improved management of both the institutional level TEF, and a future subject level TEF. In terms of emergence, members of staff are informed that the research suggests the TEF is a

complex educational policy which has emerged into a highly bureaucratic university mechanism. This is followed by a discussion on the university's response to this emergence, which in all cases within the sample was conducted by one member of senior management within a business school, who reported to their Vice Chancellor, while also receiving support from a loose self-regulating group. This point is then developed by a discussion on comment respondents in regards to a perceived lack of opportunity to contribute to the adaption process and the importance of an informed contribution as the TEF assumes its final subject level format. Following this there is a discussion on Holland's concept of signals and boundaries which includes, the signals emitted by the TEF and the boundaries that the policy seeks to implement in both its institutional and in its planned subject specific form. Moreover, this action point increases the awareness of CAS theory in the four key areas which form the four pillars of the research; emergence, adaption, signals and boundaries, and the edge of chaos in an attempt provide a framework which is may be used effectively and does not in itself become over complex. This simplicity represents a key aspect of Holland's work on presenting CAS theory to a wider audience.

7. The role of metrics within institutional level and subject level TEF:

An action point which introduces themes which have emerged from the research, and relate to the role of metrics within current professional practice. Within the research, respondents expressed a high level of dissatisfaction with the use of metrics to measure their performance, within a wide variety of academic delivery and locations. One of the main points raised by members of staff within the research asks the question; how can metrics effectively measure the phenomenon of teaching? This reflects a general dissatisfaction with the National Student Survey as a core generator of data and the development of university league tables. In this context, members of staff are encouraged to discuss their own experiences of the NSS and the manner in which engagement with the survey can be increased and improved. Comments within the research suggests that the continued use of the Likert scale, and in particular, the element which asks the respondent to choose between "agree" and "definitely agree" in identified as being misunderstood by students during completion. Suggestions for the improvement of the situation are then discussed, and this includes the suggestion that students require more training in order to understand the implications of just choosing "agree" right through the survey in order to save time and thereby influencing the overall data results. The research also suggests that final year students are not greatly engaged with the idea of improving the quality of delivery within successive cohorts. This action point was included in order to increase the understanding amongst members of teaching staff of the ways in which respondents in the research outlined the importance of cohort size, room conditions, and time

of day as important factors in achieving the best possible metric results. It also expresses their concerns that over the attempt to measure the phenomenon of teaching.

8. The use of visual metaphors to identify the causes of complexity:

An action point which suggests that members of staff might create metaphors on individual pieces of paper based on the complexity which they are experiencing in the work place. Members of staff are encouraged to be as creative as possible and have free range to produce any metaphor which they consider to be appropriate in describing complexity within their work situation. The pieces of paper are then exchanged and members of staff are encouraged to discuss solutions to other people's metaphors. The use of metaphors has previously been used by Zimmerman (2012) in her attempts to manage complexity within the Health Sector in America. The members of staff are introduced to Zimmerman's previous attempts to manage complexity through her concept of *edgware* which seeks to provide insights from complexity science for health care leaders to use. The use of metaphors encourages the members of staff to visualise the most stressful aspect of their professional practice and in doing so, identify the presence of *complexity attractors* within their organisation, in contrast to traditional responses to hierarchical imposition. Members of staff are informed that the research into the emergence of the institutional level TEF from a CAS theory perspective is an attempt to transfer *edgware* concepts from the health care sector in America to an organisational level in home universities. It is emphasised in this action point that the researcher has chosen to promote what is in fact Zimmerman's interpretation of dealing with organisational complexity in the health care industry in America and applied it within university context, in order to promote the improved management of the complexity generated by policy implementation. This represents a significant transfer of knowledge, by transferring Zimmerman's Zone of Complexity, from public health to higher education.

9. The use of CAS theory in professional teaching practice:

An action point which encourages members of staff to consider the use of CAS as a theoretical lens in order to recognise that their particular university may be at what seems to be the edge of chaos, when in fact CAS theory suggests that this is a positive state which is full of opportunity. The use of such an approach is very much in keeping with CAS theory, which suggests that systems should not be implemented hierarchically, but rather developed from simple beginnings over time – from the bottom up and not the top down. In this sense, CAS theory is critical imposition of hierarchical systems which introduce unnecessary complexity into existing bureaucratic functions. The majority of respondents within the research indicated that their Universities have been pushed to the limit by successive policies such as the increase in tuition fees, as well as the REF and the institutional level TEF. The response to

the situation has been that several experienced members of teaching staff have since left the institutions, due to what they perceive to be an impossible situation where they consider they have been positioned to become service providers, rather than knowledgeable guides within a transformative experience. This was effectively expressed by one respondent who referenced Gramsci when describing the present state of higher education as being “neither at the end of something for the beginning of something”. However, the study of CAS theory enables members of staff to see this in between state is merely being a moment when one system changes into another system over time. Furthermore, being aware of the origins of complexity within a university environment, and the complex workings of the institutional level TEF also increase the level of understanding in regards to the forthcoming subject specific TEF, and the professional creativity, which is capable of transcending the Zimmerman’s Zone of Complexity or Edge of Chaos as it is also called through the use of innovative thinking - an invaluable source of problem solving potential, which is often marginalised when using a hierarchical micromanaged approach. The point being that CAS theory sees the Edge of Chaos as a desired state in which formal management and the marginalised creativity of staff can successfully coexist. Therefore, this action point represents a paradigm shift in the approach to complexity within universities and offers an opportunity for a success navigation of a seemingly insurmountable position. This is developed from the idea that just introduction a new manager with a new system may not be the only answer.

10. The use of Complex Adaptive Systems in Senior Management.

This is an action point which encourages senior managers to consider the use of CAS as a scientific theoretical lens in order to contemplate their own role within a traditional hierarchical structure during periods of organisational change. There is reference within the research to a respondent’s anecdote of having four managers within ten years, and the manner in which the respondent was moved four times from desk to desk before being returned to the very desk at which they originally sat. In this sense, the research reveals a strong sense of disenfranchisement between hierarchical management and the problem solving capacity of staff. This is reflected in comments in the research which express disappointment at a lack of opportunity to participate in the response to the emergence of the institutional level TEF. This created a sense of helplessness and ontological anxiety within teaching staff, and a wealth of experience from both the private and public sectors, remains untapped. The research suggests a noticeable gap between the organisational vision and the reality of an emerging customer paradigm, and its associated customer driven expectations which transcend any formal academic timetable. The practice of change management remains focused on a quest for equilibrium, which is to be achieved through a form of hierarchical micromanagement which sees an organisation as a machine. However, the state of equilibrium is never reached using

this approach, and the research suggests that universities continue to be overloaded by successive layers of complexity caused by the implementation of policies at discontinuous points. Moreover, it may be suggested that when senior managers are coached in the CAS theories of Emergence, Adaption, Signals and Boundaries, and the edge of chaos, they may be capable of creating a dynamic and innovative environment which is capable of responding to the implementation of complex educational policies. Another important point revealed within the research was the difference between the management of small, medium, and large-scale universities and the impact this is capable of having upon the successful of the TEF at subject level. Senior Management might also wish to be aware of comment from one of the respondents who argued that the true capabilities of lecturers, and their subject knowledge was often *unexploited* due to the pressures of delivering existing units, which have remained unchanged for many years. Therefore, this action plan is designed to encourage senior managers (clockware) to step back and allow the teaching staff to contribute seemingly abstract ideas (swarmware) and then for them to both work together to develop a solution with unitises the wealth of experience within the teaching staff which includes in many cases, experience in dealing with complexity within private sector organisations. Therefore, this action plan is designed to encourage senior managers (clockware) to step back and allow the teaching staff to contribute seemingly abstract ideas (swarmware) and then for them to both work together to develop a solution with unitises the wealth of their collective experience.

References

- Abualrub, I., & Stensaker, B. (2018). *How are universities responding to demands for an improved learning environment?* Journal of Further and Higher Education. Volume 42, Issue number 5
- Akerlind, G. S. 2005. *Academic Growth and Development – How do University Academics Experience It?* Higher Education 50 (1): 1–32.
- Akrivou, K., & Bradbury-Huang, H. (2015) *Educating integrated catalysts: Transforming business schools towards ethics and sustainability*. Academy of Management.
- Altbach, P. Reisberg, L . and Rumbley, L, E, (2009) *Trends in Global Higher Education: Tracking an Academic Revolution*. A Report Prepared for the UNESCO 2009 World Conference on Higher Education.
- Altbach, P. (2013) *The International imperative in Higher Education*. Sense. Rotterdam.
- Alvesson, M. (2017) *Reflexive Methodology: New Vistas for Qualitative Research*. Sage.
- Antunes, D. & Thomas, H. (2007) *The competitive (dis) advantages of European business schools*. Long Range Planning. Volume 40. Pages 382-404

- Aritua, B., Smith, N.J. & Bower, D. *Construction client multi-projects – A complex adaptive systems perspective*. International Journal of Project Management.
- Axelrod, R. (1995) *The complexity of cooperation: Agent-based models of competition and collaboration*. Princeton university press.
- Bakar, (2013) A.R.A. Rah & Abdul-Talib, A.N. *A case study of an internationalization process of a private higher education institution in Malaysia*. Gadjah Mada International Journal of Business, Vol. 15, No. 3. pp 211-230
- Barber, R. & Upadhyay, Y.(2014) *Intensity as Moderator on Market Orientation and Performance Relationship in Private Universities*. South Asian Journal of Management Volume 22 113 No. 1
- Barrett, S.M. (2004) *Implementation studies for a revival? Personal reflections on 20 years of implementation studies*. P.A. Public Administration.
- Barratt, M. Choi, Y.T. & Mei L. (2011) *Qualitative case studies in operations management: Trends, research outcomes, and future research implications*. Journal of Operations Management Volume 29, Issue 4, pp 329-342
- Beer, R, D. (1995) *A dynamic systems perspective on agent-environment interaction*. *Artificial Intelligence*, volume 72, Issues 1-2
- Berman, M. (1982) *All that is solid melts into air: The Experience of Modernity*. Verso. London.
- Bechel, W. (2016) *Investigating neural representations: the tale of place cells*. Synthese. Volume 193, Issue 5, pp 1287–1321
- Begun, J, W. Zimmerman, B. Dooley, K. (2003) *Healthcare as a Complex Adaptive System*. Chapter 3 Published in: Mick, S.M. Wytenbach, M (eds.), *Advances in Health Care Organization Theory* San Francisco, Jossey-Bass, pp 253-288
- Begun, J,W. Dooley, K,J. Zimmerman, B, J. (2003) *Merger as marriage: communication issues in post-merger integration*. Health care management review. Volume 28, Issue 1
- Bell, J.S. & Bell, J.S . (2004) *Speakable and Unspeakable in Quantum Mechanics* (second edition) Cambridge University Press.
- Berg, B,L. & Lune, H. (2004) *Qualitative research methods for the social sciences*. Fifth edition. Pearson, Boston.
- Biesta G.J.J. (2011) *Towards the Learning Democracy*. In: *Learning Democracy in School and Society*. Sense Publishers
- Brehm, J.W & Cohen, A.R. (1962) *Explorations in cognitive dissonance*. Hoboken, NJ, US: John Wiley & Sons Inc
- Bridgeman, P & Davis, G. (2004) *The Australian Policy Handbook*. Political Science. Allen and Unwin.

- Brown, S. L., & Eisenhardt, K. M. (1997) *The Art of Continuous Change: Linking Complexity Theory and Time-Paced Evolution in Relentlessly Shifting Organizations*. Administrative Science Quarterly, Vol. 42, pp. 1-34
- Bolden, R. (2016). *Management and Organisational Development*. Gower handbook of leadership and management.
- British Council (2008) International Student Mobility in East Asia: Executive summary.
- Brothy, J. & Bawden, D. (2005) *Is Google enough? Comparison of an internet search engine with academic library resources*. Aslib Proceedings, Volume 57, Issue: 6, pp. 498-512
- Burke, P. (2005) *History and social theory*. Politi Press. Cambridge
- Cameron, L. & Larsen-Freeman, D. (2007) *Complex systems and applied linguistics International Journal of Applied Linguistics*, 17(2) pp. 226–239
- Cantley, I. (2015) *How secure is a Newtonian paradigm for psychological and educational measurement?* Theory and Psychology Volume. 25 (1) 117-138
- Carter, R.E. & Curry, D.J. (2011) *Using student choice behaviour to estimate tuition elasticity in higher education*. Journal of Marketing Management 27:11-12, 1186-1207
- Cairney, P. (2013) *Standing in the shoulders of giants: How do we combine the insights of multiple theories in public policy studies?* Policy Studies Journal.
- Chen, L. Yuan, F. Jose. J.M. Jose, J.M. & Zhang, W. (2018) *Improving Negative Sampling for Word Representation using Self-embedded Features*. WSDM '18 Proceedings of the Eleventh ACM International Conference on Web Search and Data Mining
- Chenail, R.J. (2011). *Interviewing the Investigator: Strategies for Addressing Instrumentation and Researcher Bias Concerns in Qualitative Research: Validation of Score Meaning for the Next Generation of Assessments: The Qualitative Report (TQR)*
- Chiva, R. Ghauri, P. Alegre, J. (2014) *Organisational learning, innovation and internationalisation: A complex system model*. British journal of Management.
- Choi, T. Y. Dooley, K.J. & Rungtusanatham, M. (2001) *supply networks and complex adaptive systems: control versus emergence*. Journal of Operations Management. Volume 19, Issue 3, Pages 351-366
- Cecez-Kecmanovic, D. (2004). *A sense making model of knowledge in organisations: a way of understanding knowledge management and the role of information technologies*. Knowledge Management Research & Practice., Volume 2, Issue 3, pp 155-168
- Cirella, S. Radaelli, G. (2014) *Team creativity: A complex adaptive perspective*. Management Research. Emerald insight.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications: Thousand Oaks
- Crosland, A. (1965) *Woolwich Polytechnic speech of 27th April 1965*. Retrieved from <http://www.hepi.ac.uk/2016/08/15/polytechnics-or-universities>

- Cunliffe, A.L. (2010). *Crafting Qualitative Research: Morgan and Smirch 30 years on*. Organisational Research Methods. Sage.
- Cunliffe, A.L. (2003). *Reflexive inquiry in organizational research: Questions and possibilities* *Human Relations* : Sage Volume 56(8)
- Cortes, M. Llasat, M.C. Gilabert, J. and Lasat-Botija, M. (2018). *Towards a better understanding of the evolution of flood risk in Mediterranean urban area: the case of Barcelona*. *Natural Hazards*. Volume 93, Supplement 1, pp 39–60
- Cummings, J.N. and Kiesler, S. (2005). *Collaborative research across disciplinary and organisational boundaries*. *Social Studies of Science*.
- De'Bell., & Clark, R. (2018). *Mindful Leadership in Interprofessional Teams: The International Journal of Whole Person Care*. Volume 5. Number 2.
- Denzin, N.K. and Lincoln, S.Y. (Eds) (2016) *The Sage handbook of qualitative research*. Sage. London.
- Dillabough, J.A. (2016) *Education, work, and identity: themes and perspectives*. *Journal of Education Policy*, 31:5, 678-680
- Dougherty, L, F. Ambler, N,P. Trantis, K, P. (2016) *A complex adaptive systems approach for productive efficiency analysis: building blocks and associative inferences*. *Annals of Operations Research*. Volume 250, Issue 1, pp 45–63
- Doyle, T. Brady, M. (2018) *Reframing the university as an emergent organisation: implications for strategic management and leadership in higher education*. *Journal of Higher Education Policy and Management*. Volume 40, 2018 - Issue 4
- Dooley, K.J. (1997) *A complex adaptive systems model of organisational change*. *None dynamics, psychology, and life sciences*. Springer.
- Dreijmanis, J. (1977) *Political Development and Higher Education*. *International education; Knoxville* Volume 7, Issue 1.
- Dror, Y (1983) *Public Policy Making Reexamined*. Routledge. New York.
- Dubois, S. & Walsh, I. (2017) *The globalization of research highlighted through the research networks of management education institutions: the case of French business schools*. *Management*, vol. 20(5): 435-462
- Evans, P. (1997) *The eclipse of the state? Reflections on stateness in an era of globalisation*. *World Politics*. Volume 50. Issue 1. Special issue.
- Evered, R. & Louis, M. (1991) *Research Perspectives*, in Craig Mith, N. and Dainty, P. (Eds.) *The Management Research Book*, Routledge, London.
- Fairclough, N. (2005) *Discourse analysis in organisation studies: The case for critical realism*. *Journal of Organisational Studies*.
- Fellows, R, F. Liu, A.A.M. (2015) *Research method for construction*. Wiley.

Fisher, C.W. (1978) *Teaching Behaviours, Academic Learning Time and Student Achievement: Final Report of Phase III-B, Beginning Teachers Evaluation Study*. Technical Report V-1.

Fleming, L. and Marx, M. (2006) *managing creativity in small worlds*. California Management Review.

Fleming, L. (2007) *Breakthroughs and the “long tail” of innovation*. MIT Sloan Management Review.

Folke, C. (2006) *Resilience: The emergence of a perspective for social-ecological systems analysis*. Global Environmental Change. Volume 16, Issue 3, Pages 253-267

Freeman, C. and Luc, S. (2013) *Economics of industrial innovation*. Third edition. Taylor Francis.

Fredman, N. and Doughney, J. *Academic dissatisfaction, managerial change and neo-liberalism*. Journal of Higher Education (2012) pp 64: 41.

Frolich, N. Christensen, E.F., and Thygesen, N. (Ed) (2018) *The illusion of Management Control. A Systems Theoretical approach*. Palgrave, Macmillan. Basingstoke.

Gaber. J. & Gaber. S. (2017) *Qualitative analysis for planning and policy: Beyond the numbers*. Routledge. Oxford.

Glinka, B., Hensel, P. G. (2017) *Reforms and identities: How relentless pursuit of improvements produces a sense of helplessness among bureaucrats*. Journal of Organizational Change Management, Vol. 30 Issue: 2, pp.142-160

Gould, N.E.S.J. & Eldredge, N. (1972) *Punctuated equilibria: an alternative gradualism*. Cited in Essential Readings in Evolutionary Biology edited by Ayala, J.F, and Avise J.C.

Grover, S. and Pea,R. (2018) *Computational Thinking: A competency whose time has come. In Computer science Education: Perspectives on teaching and learning*. Sentence, S.,Carsten, & Barendsen, E. (Eds)

Gu, Q. (2011) *An Emotional Journey of Change: The Case of Chinese Students in UK Higher Education*. In: Jin L., Cortazzi M. (eds) *Researching Chinese Learners*. Palgrave Macmillan, London

Hannah. S.B. (1996) *The Higher Education Act of 1992: Skills, Constraints, and the Politics of Higher Education*. The Journal of Higher Education

Hastings, K. and Perry, C. (2000) *Do service exporters build relationships? Some qualitative perspectives*, Qualitative Market Research; an International Journal, Vol. 3 (4), pp. 207-214.

Hall, S., O'Shea, A. (2013) *Common Sense Neoliberalism*; Soundings, Number 55, 13, pp. 9-25. Lawrence and Wishart.

Hallsworth, M. Parker, S, Rutter J. (2011) *Policy making in the real world: Evidence & Analysis*. Institute of Government.

- Heidbreder, E, G. (2017) *Strategies in multilevel policy implementation: moving beyond the limited focus on compliance*, Journal of European Public Policy, 24:9, 1367-1384
- Higgs, M., & Rowland, D. (2000). *Building change leadership capability: The quest for change competence*. Journal of Change Management. Volume 1:2, pp.116-130
- Hoban, G.F. (2002) *Teacher learning for educational change: A systems thinking approach*. Open University Press
- Hodgson, A. & Spours, K. (2016) *Restrictive and expansive policy learning - challenges and strategies for knowledge exchange in upper secondary education across the four countries of the UK*, Journal of Education Policy, volume 31:5, pp 511-525.
- Holland, J. H. (1992) *Complex Adaptive Systems*. Daedalus; Research Library pp. 17
- Holland, J.H. (2012) *Signals and Boundaries. Building blocks for complex adaptive systems*. Massachusetts Institute of Technology.
- Holland, J.H. (2014) *Complexity: A very short introduction*. Oxford University Press.
- Holland, J.H. (2002) *Complex adaptive systems and spontaneous emergence – complexity and industrial clusters*. Dynamics and Models in Theory and Practice. Curzio, A.Q. and Fortis, M. (Eds).
- Hubble, S. & Bolton, P. (2018) *Student loan interest rates FAQ's*. House of Commons library briefing paper.
- Humphrey, T.M. (2001) *The choice of a monetary policy framework: Lessons from the 1920's*. CATO Journal. Volume 21. Issue 1.
- Huxley, G. Mayo, J. Peacey, M,W. & Richardson, M. (2018) *Class size at University*. Fiscal studies, Vol. 39, Issue 2.
- Innes, J.E. & Booher, D.E (1999) *Consensus Building and Complex Adaptive Systems*, Journal of the American Planning Association, 65:4, 412-423
- Isidori A. (2017) *Stabilization of Nonlinear Systems via State Feedback*. In: *Lectures in Feedback Design for Multivariable Systems*. Advanced Textbooks in Control and Signal Processing. Springer, Cham.
- Jacqueline, J. (2017) cited in chapter 3: Ercikan, K. & Pellegrino, J, W. (Eds) *The Use of Response Processes*. Routledge, New York.
- Jonas, M,M. (2018) *Stakeholder integration in service innovation*. Springer
- Kaufman, D.M. (2003) *Applying educational theory in practice*. British Medical Journal. 326:213
- Kauko, J (2014) *Complexity in higher education politics: bifurcations, choices and irreversibility*, Studies in Higher Education, 39:9, 1683-1699
- Kelly, F. (1995) *Out of control*. The new biology of machines, social systems, and the economic world. Kelly Publishing,

Kershner, B. & Mcquillan, P.J. (2010) *Complex Adaptive Schools: Educational Leadership and School Change. Complicity, International Journal of Complexity and Education*. Volume 13, Number, 6.

Kerwin, C.M. & Furling, S.R. (2017) *Rulemaking: How Government Agencies Write Law and Make Policy*. 4th ed. CQ Press. Washington.

Kirby-Harris, R. (2003) *Universities responding to policy: Organisational change at the University of Namibia*. Higher Education 45: 353–374, 2003.

Knights, D. & Clark, C (2018). Living on the edge? Professional anxieties at work in academia and veterinary practice. *Culture and Organisation*. Vol. 24 Issue 2, p134-153.

Krell (2007) *The business of Business Schools is changing*. Baylor Business Review. Baylor University Press.

Kusumastuti, R. Kasim, A. Hardjosoekarto, S.(2018) *Strategic Ambidexterity Learning of Innovation Activities: A Study of Indonesian Business Group Leader: a study of Indonesian Business Group Leaders*. Journal of Policy and Governance.

Langton, C.G. (1990) Computation at the edge of chaos: phase transitions and emergent computation. *Physica D: Nonlinear Phenomena*.

Lasswell, H. (1951) *A preview of policy sciences*. American Elsevier Publishing

Lasswell, H, Ilchman, W, F, Montgomery, J, D, & Weiner M. (1971) *Policy Sciences and Population*. D.C. Heath and Company. Lexington, Mass.

Leighton, J,P. (2007) *Collecting and Analysing Verbal Response Process Data in the Service of Interpretive and Validity Arguments*. Rutledge. New York.

Lewin, R. (1999) *Complexity: Life at the edge of chaos*. University of Chicago Press.

Lichtenstein, B.B. & Plowman, D.A (2009) *The leadership of emergence: A complex systems leadership theory of emergence at successive organisational levels*. *Leadership Quarterly* 20:4. pp. 617–630;

Lin, N. (2005) *Social Capital: A theory of Social Structure and Action*. Cambridge University Press.

Lin, N. (2017) *Building a network theory of social capital*. Cambridge University Press.

Littlejohn, A. & Hood, N. (2018) *A Crisis of identity? Contradictions and New Opportunities. Reconceptualising Learning in the Digital Age. Reconceptualising Learning in the Digital Age*. Springer Briefs in Education. Springer, Singapore

Lorange, P. & Thomas, H. (2016) *Pedagogical advances in business at business schools – in the age of networks*. *Journal of Management Development*, Emerald

Lorenz, E, N. (1963). Deterministic Nonperiodic Flow. *Journal of the Atmospheric Sciences*. 20 (2): 130–141.

- Lowery, D (2013) *Lobbying influence: Meaning, measurement, and missing. Interest groups and Advocacy*. Volume 2, Issue 1, pp
- Lucas, N, & Crowther, N (2016) *The logic of the Incorporation of further education colleges in England 1993–2015: towards an understanding of marketisation, change and instability*. *Journal of Education Policy*, 31:5, 583-597
- Lynne, C. & Larsen-Freeman, D (2007). *Complex systems, and applied linguistics*. *International Journal of Applied Linguistics*., 17(2) pp. 226–239.
- Lyotard, J-F, (1984) *The Post-Modern Condition: A report on knowledge*. Manchester, Manchester University Press.
- Maggetti, M. & Gilardi, F. (2016) *Problems (and solutions) in the measurement of policy diffusion mechanisms*. Cambridge University Press, Volume 36. Issue 1
- Malik,P, Garg,P. (2017) *The relationship between learning culture, inquiry and dialogue, knowledge sharing structure and affective commitment to change*. *Journal of Organizational Change Management*, Vol. 30 Issue: 4, pp.610-631
- Manjchrzak, A. More, P.H.B. (2012). *Transcending knowledge differences in cross-functional teams*. *Organisational Science* Volume.23, Number 4
- Marcus, B., Weigelt, O., Gurt, J.(2017) *The use of snowball sampling for multi-source organisational research: Some cause for concern*. *Personal psychology*. Volume 70, Issue 3, pp 635-673
- Marden, R. J. & Shamma J.S. (2018) *Annual Review of Control, Robotics, and Autonomous Systems*.Vol.1:105-134
- Marginson, S. (2006) Dynamics of national and global competition in higher education. *Journal of Higher Education*, 52(1), 1–39.
- Martin, B.R. (2011) *The Research Excellence Framework and the “impact agenda” ; are we created a Frankenstein Monster?* *Research Evaluation*, Volume 20, Issue 3, 1 September 2011, Pages 247–254
- Mason, M. (2010) *Complexity theory and philosophy of education*. *Educational Philosophy and Theory*. 40:1, 35-49
- May. S. (2010). *The Teaching Excellence Framework: Voices from the sector (2)* .Higher Education Authority.
- Mayer, K.A. (2003) *Face-to-face versus threaded discussions: The role of time and higher-order thinking*. *Journal of Asynchronous Learning Networks*. Volume 7, Issue 3.
- Maynard Smith (1983) *The genetics and stasis and punctuation*. *Annual Reviews*. Number 17. pp 11-25.
- Maxwell, A.L. Levesque, M. (2014) *Trustworthiness: A Critical Ingredient for Entrepreneurs Seeking Investors*. *Entrepreneurship, theory, and practice*. Banner. Volume 38, Issue5

- Meadows, D. (1999) *Leverage points: Places to intervene in a system*. The Sustainability Institute.
- Merrow, J (2005) *Declining by Degrees*. The Carnegie Foundation for the advancement of teaching.
- McGuffey, L.W. & Robinson, T. (2017) *Neoliberalism in the Academy: Dispatch from a Public University in Colorado*. World social and economic review of contemporary issues. Issue number 8.
- Mifsud, D. (2016) *Actor-Network Theory (ANT): As assemblage of Perceptions, Understandings, and Critiques of this 'Sensibility' and how its Relatively Under-Utilized Conceptual Framework in Education Studies can aid Researchers in the Exploration of Networks and Power Relations*. International Journal of Actor-Network Theory and Technological Innovation. Volume 6 (1) Pages 16.
- Milivojevic, T. & Megatrend Revija (2017) *Contradictions between emphasising creativity in theory and stifling it in practice*. Volume. 14, br. 1. str. 207-222
- Mintzberg, H. (2004). *Managers, Not MBAs: A Hard Look at the Soft Practice of Managing and Management Development*. San Francisco: Berrett-Koehler Publishers.
- Mintzberg, H. Gosling, J (2002). *Educating managers beyond borders*. Academy of Management Learning and Education. Volume.1 Number.1
- Morowitz, H.J. (2002) *The Emergence of Everything*. Oxford University Press.
- Morrissey, J (2015) *Regimes of performance: practices of the normalised self in the neoliberal university*. British Journal of Sociology of Education, 36:4, 614-634.
- Moulton, S, Stanford, J. Stanford, R (2017) *The strategic action field framework for policy implementation research*. The Policy Studies Journal, volume 45, No.1
- Nardy, P.M. (2018) *A Guide to Quantitative Methods*. 4th edition. Routledge. New York.
- Narayanan,V. K., Fahey, L. (2005): *The relevance of the institutional underpinnings of Porter's five forces framework to emerging economies: An epistemological analysis*. Journal of Management Studies 42.1: 207-223.
- Ntonia, I. Freeman, E. Joseph, L, & Savva, G. (2014) *Response efficiency: Behavioural manifestations, of an emotions - led subjective experience of duration*. Procedia Social and Behavioural Sciences. Volume 126. 247-248.
- Orgawa, S (2018) *Dynamic Analysis of a Disequilibrium: Macroeconomic Models with Dual Labor Markets*. mpra.ub.uni-muenchen.de
- Palmberg, K. (2009) *Complex adaptive systems metaphors for organisational management*. Emerald insight.
- Paro, P.P.E.P.(2017) *Organisational culture for lean programs*. Journal of Organisational Change Management, Volume. 30. Issue 4.

- Pastor, L. & Veronesi, P. (2012) *Uncertainty about government policy and stock prices*. The Journal of Finance. Wiley.
- Perkins, D.N. (1985) *The fingertip effect: How information-processing technology shapes thinking*. Educational Researcher Volume 14, Issue 7, pp. 11 - 17
- Petre, M. & Rugg, G, *The Unwritten Rules of PhD Research Open Up Study Skills*. Berkshire: Open University Press, (2010), volume 14
- Phillimore, A.B. & Price T.D. (2008). *Density-dependent cladogenesis in birds*. PLoS biology, journals.plos.org.
- Pylak, K (2015) *Changing innovation process models: a chance to break out of path dependency for less developed regions*, Regional Studies, Regional Science, 2:1, 46-72
- Rabaey, J.M. (2015). *The Human Intranet - Where Swarms and Humans Meet*. IEEE Pervasive Computing., Volume 14. Issue: 1.
- Rawls, A. W. (1987). *The interaction order sui generis: Goffman's contribution to social theory*. Sociological theory, 136-149.
- Rayment, J. & Smith, J. (2013). *The current and future role of business schools*. Education and Training. Emerald.
- Reynolds, C.W.(1987). *Flocks, herds and schools: A distributed behavioural model*. SIGGRAPH 87' Proceedings of the 14th annual conference on computer graphics and interactive techniques. Pages 25-34
- Richardson, M.J. & Chemero, A. (2014) in Shapiro, L (Ed) *Complex dynamical systems and embodiment*. Routledge handbook of embodied Cognition. pp.39-50
- Robinson, P. (2002) *Priorities for public policy*. New Economy. Wiley.
- Rouse, W.B. (2008) *Health care as a complex adaptive system: implications for design and management*. Bridge -Washington-National Academy of Engineering.
- Russell group response to the HE Green Paper and the independent review of the Research Councils by Sir Paul Nurse* (2016). Russellgroup.ac.uk/policy/policy-documents/response-to-the-he-green-paper.
- Sahlberg, P. (2011) *The Professional Educator: Lessons from Finland*. American Educator, volume 35 number 2 p34-38
- Salehi-Sangari, E & Foster, T. (1999) *Curriculum internationalisation: A comparative study in Iran and Sweden*. European Journal of Marketing
- Salmi, J. *The challenge of establishing world class universities*. The World Bank Group
- Salmi, J. & Saroyan, A. *League tables as policy instruments*. Higher education management and policy, 2007
- Sanders, R.H. (2010) *The Bologna accord: a model of cooperation and cooperation*. Quest. Taylor and Francis

Senior, C. Moores. E. Moores. & Burgess. A. (2017) *"I can't get no satisfaction": Measuring Student Satisfaction in the age of a consumerist Higher Education*. Front Psychol. 2017; 8: 980

Schwandt, T.A. Lincoln, & Guba, E.G. (2007) *Judging interpretations: But is it rigorous? trustworthiness and authenticity in naturalistic evaluation*. *Enduring Issues in Evaluation: The 20th Anniversary of the Collaboration between NDE and AEA*. Special Issue: 114

Schwier. S. (2012) *The corrosive influence of competition, growth, and accountability on institutions of higher education*. Journal of Computing in Higher Education. Journal of Computing in Higher Education. Volume 24, Issue 2, pp 96-103

Schofield. J.M. (2018) *Social Rules: Origin; Character; Logic; Change., Rules of Equilibrium*. Taylor Francis.

Schegloff, E.A. (1987). *Between micro and macro: Contexts and other connections*. The micro and macro link. University of California Press. Berkeley.

Sheehan, J.R. Doll, W.E. & Mandell. W.A. (2005). *An evolution of methods and available software for seismic refraction tomography analysis*. JEEG, 10(1), 21-34.

Shihua, C. & Jinhu, L. (2012) *Synchronization of an uncertain unified chaotic system via adaptive control*. Chaos, Solitons and Fractals volume 14. pp 643–647. Beijing.

Siaw, I. & Yu, A. (2004) *An analysis of the impact of the internet on competition in the banking industry, using Porter's five forces model*. International Journal of Management. Volume 21. Number 24.

Stacey, R. D. (1996). *Complexity and creativity in organizations*. San Francisco, CA, US: Berrett-Koehler Publishers

Stacey, R.D. Griffin, & D, Shaw, P. (2002) *Complexity and management*. Routledge.

Stavrou, S (2017) *Pedagogising the university: on higher education policy implementation and its effects on social relations*, Journal of Education Policy. Pages 789-804

Sternglass, M.S. (1997). *A Longitudinal Study of Writing and Learning at the College Level: Time to know them*. Sternglass, M. (1997). Time To Know Them. Routledge. New York.

Stephanos, A. (2017) *Master's Students' Experience of Supervision in the Shadow of the Teaching Excellence Framework*. Academy of Management Annual Meeting Proceedings, Vol. 2017 Issue 1.

Stiles, J. (2003) *A philosophical justification for a realist approach to strategic alliance research*, Qualitative Market Research: An International Journal, Vol. 6 (4), pp. 263-271

Stokes, P. & Wall, T. (2014) *Research methods*. Palgrave. London.

Strogatz, S.H. (2001) *Exploring complex networks*. Insight review. Macmillan.

Tannock, S (2018) *International students in the UK caught between market forces and immigration targets*. Educational Equality and International Students pp 39-67. UCL Institute of Education London UK

Tashakkori, A., & Creswell, J. W. (2007). Editorial: *The new era of mixed methods*. *Journal of mixed methods research*. Sage.

Taylor, J. (2006) *Big is Beautiful: Organisational Change in Universities in the United Kingdom: New Models of Institutional Management and the Changing Role of Academic Staff*. Higher Education in Europe, volume 31:3, pages 251-273

The Teaching Excellence Framework: *Assessing quality in Higher Education Third Report of Session 2015–16*

The Robbins Report, *Education & Training*, Vol. 5 Issue: 12, pp.563-606,

TEF White Paper (2015) *Higher education: teaching excellence, social mobility and students choice*. Department for Business, Innovation & Skills (BIS)

TenHouten, W.D. (2017) Site sampling and snowball sampling – methodology for accessing hard-to-reach populations. *Bulletin of Sociological Methodology*. Volume: 134 issue 1. pp 58

Thomas (2012) *Business schools in transition? Issues of impact, legitimacy, capabilities and re-invention*. *Journal of Management Development*. Emerald.

Thomas, H. Lee, M. & Wilson, A (2014) *Future scenarios for management education*, *Journal of Management Development*, Vol. 33 Issue: 5, pp.503-519.

Thomlinson. (2014) *Differentiated Classroom: Responding to the needs of all learners*. 2nd edition. ASCD. Alexandria. VA. USA.

Traud, A.L., Kelsic, D.E., Mucha, P.J., & Porter. M.A. (2011) *Comparing Community Structure to Characteristics in Online Collegiate Social Networks*. *SIAM Review.*, Volume 53.Issue 3, pp.526-543.

Trippl, M. Sinozic, T. & Lawton-Smith, H. (2015). *The role of universities in regional development: Conceptual models and policy institutions in the UK, Sweden and Austria*. *European Planning Studies*, Vol. 23, No. 9, 1722–1740.

Turing. A. M.(1952). *The chemical basis of morphogenesis*. The Royal Society Publishing.

Toth, Z. Henneberg,S.C. & Naude, P (2017) *Addressing the “Qualitative” in fuzzy Qualitative Comparative analysis: the generic membership evaluation template*. *Industrial Marketing Management*.

Universities UK (2014) *The funding environment for universities - International students in higher education: The UK and its competition*. Higher Education in Focus.

Van der Ploeg, M,J. Baartman, J.E.M. & Robinson, D.A. (2017). *Biophysical landscape interactions: Bridging disciplines and scale with connectivity*. *Land Degradation and Development*. Special issue.

- Von, Neumann, J. & Morgenstern, O. (2007). *Theory of games and economic behaviour*. Princeton University Press.
- Wallace, M., & Wray, A. (2011) *Critical reading and writing for post graduates* (3rd edition) Sage. London.
- Waldrop, M.M. (1993) *Complexity: The emerging science at the edge of order and chaos*. Simon and Schuster. New York.
- Wang, W.K.S. (1975) *The unbundling of higher education*. Duke law journal, pp53-90.
- Ward, V, West R, & Smith, S.(2014) *The role of informal networks in creation knowledge among health-care managers: a prospective case study*. Health Services and Delivery Research, No. 2.12. NIHR journals library, Southampton UK.
- Warner-Burke, W. (2018) *Organisational Change: Theory and Practice*. Sage. Los Angelis.
- Welsh, E. (2002) *Dealing with Data: Using NVivo in the Qualitative Data Analysis Process*. Qualitative Social Research Volume 3, No. 2, Art. 26
- White, D.G. & Levin .J.A. (2016) Navigating the turbulent waters of school reform guided by complexity theory. *Complicity the journal of complexity and education*. Volume 13. Number 1.
- Witt, J.K. (2006) Change of degrees and degrees of change: Comparing adaptations of European higher education systems in the context of the Bologna process. *Education Policy Studies (CHEPS)* pp 634 p
- Willcocks, L.P. & Lacity, M.C (2016) *The new IT outsourcing landscape: from innovation to cloud services*. Palgrave, Macmillan.
- Williams-Garcia, R.V. Beggs, & J.M. Ortiz, G. (2016). *Unveiling causal activity of complex networks*. Department of Physics, Indiana University, Bloomington, Indiana
- Williams, J. (2016) *Academic Freedom in an Age of Conformity: confronting the fear of knowledge*. Palgrave, Macmillan.
- Wilsden, J. (Chair) (2015) *Review of the independent review of the role of metrics in research assessment and management*. Steering group and secretariat. Science Policy, Research, Unit.(SPRU)
- Wilson, J (chair) (2015) *Metric Tide*. Science and Democracy at the Science Policy Research Unit (SPRU), University of Sussex
- Xia, L. Xia Yu, Zhang, T (2017) *Co-occurrence of antibiotic and metal resistance in complete genome collection*. The ISME Journal volume 11, pages 651–662 (2017)
- Yang, M. & Gabrielsson, P. (2017) *Entrepreneurial marketing of international high-tech business-to-business new ventures: A decision-making process perspective*. *Industrial Marketing Management* Volume 64. Pages 147-160
- Yin, R. K.(1994). *Case study research: Design and methods* (2nd ed.). Newbury Park, CA: Sage Publications.

- Yin, R. K. (2011). *Applications of case study research*. Newbury Park, CA: Sage Publications.
- Zimmerman, B.J. & Schunk, D.H. (2012) *Self-regulation and academic achievement: Theory research, and practice*.
- Zimmerman, B.J. & Dooley, K. (2001) *Mergers versus Emergers: Structural Change in Health Care Systems*, *Emergence*, 3:4, 65-82
- Zimmerman, B. J. (2011) *How complexity science is transforming healthcare*. Cited in Allen, P, Maguire S, and McKelvey, B (eds.), *The Sage Handbook of Complexity and Management*. Sage Publications. pp. 617--635 (2011)
- Zimmerman, B., Hayday, B. (1999). *A board's journey into complexity science: Lessons from (and for) staff and board members*. *Group Decision and Negotiation*, 8, 281-303. Kluwer Academic Publishers. Netherlands.
- Zizek, S. (2017). *The Courage of Hopelessness: A year of Acting Dangerously. The Hegalian infinite judgement*. Melville House, New York.

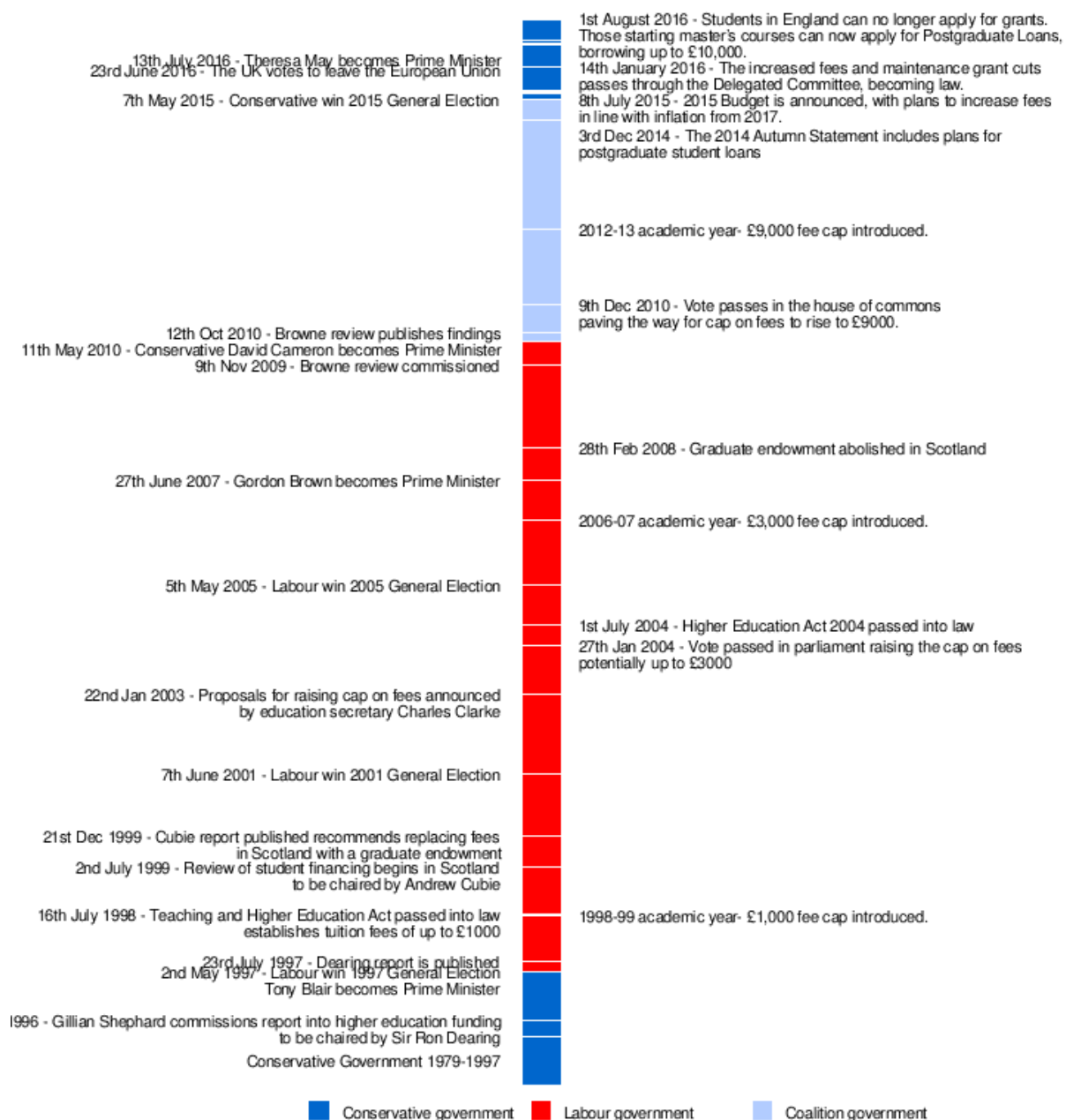


Figure A1.1: Education policy timeline.

Complexity:	Roger Lewin, G. Nicolis G. and I. Prigogine, John H Holland
Emergence:	Alan Turing: The Chemical Basis of Morphogenesis John H Holland : Emergent complexity
Flocking Boids Murmuration	Craig W. Reynolds: Computer simulations of natural phenomenon. Charlotte Hemelrijk ,Hanno Hildenbrandt: Murmuration behaviour of starlings.
Edge of Chaos	Mitchell Waldrop: Complexity: The emerging science at the edge of order and chaos. Roger Lewin: Complexity: Life on the edge of chaos.
Adaption:	John H Holland:
Self-regulation:	Ilya Prigogine: Order through fluctuations: self-organisation and social systems
None-linear activity	Murray Gell-Mann: Nature and Science, weak interactions in physics, Nobel Prize in physics: theory of elementary particles.
Agents	John H Holland
Feedback loops	John H Holland
Niches	John H Holland
Hierarchy	John H Holland
Competition	John H Holland
Disequilibrium:	John Maynard Keynes, Freidrich Hayek: Economic systems
Punctuated equilibrium:	Niles Eldredge, Stephen Gould: Evolution theory
Cellular Automata	John von Neumann, John Conway: Simple rules which generate complexity
Artificial intelligence	Herbert Simon: Decision making: Nobel Prize in Economics, The Turing Award.

Figure A1.2 : Complexity theories and their authors

Burks, Arthur	Contributed to the design of the first general-purpose electronic digital computers
Axelrod, Robert	The Evolution of Cooperation, NAS Award for Behavioural Research Relevant to the Prevention of Nuclear War. Schema theory.
Cohen, Michael	Complex Systems, Information systems and Public Policy
Holland, H, John	CAS, Genetic algorithms, schema theorem, emergence, adaption as a generator of complexity, physics, signals and boundaries.

Figure A1.3: The BACH Group: Santa Fe Institute

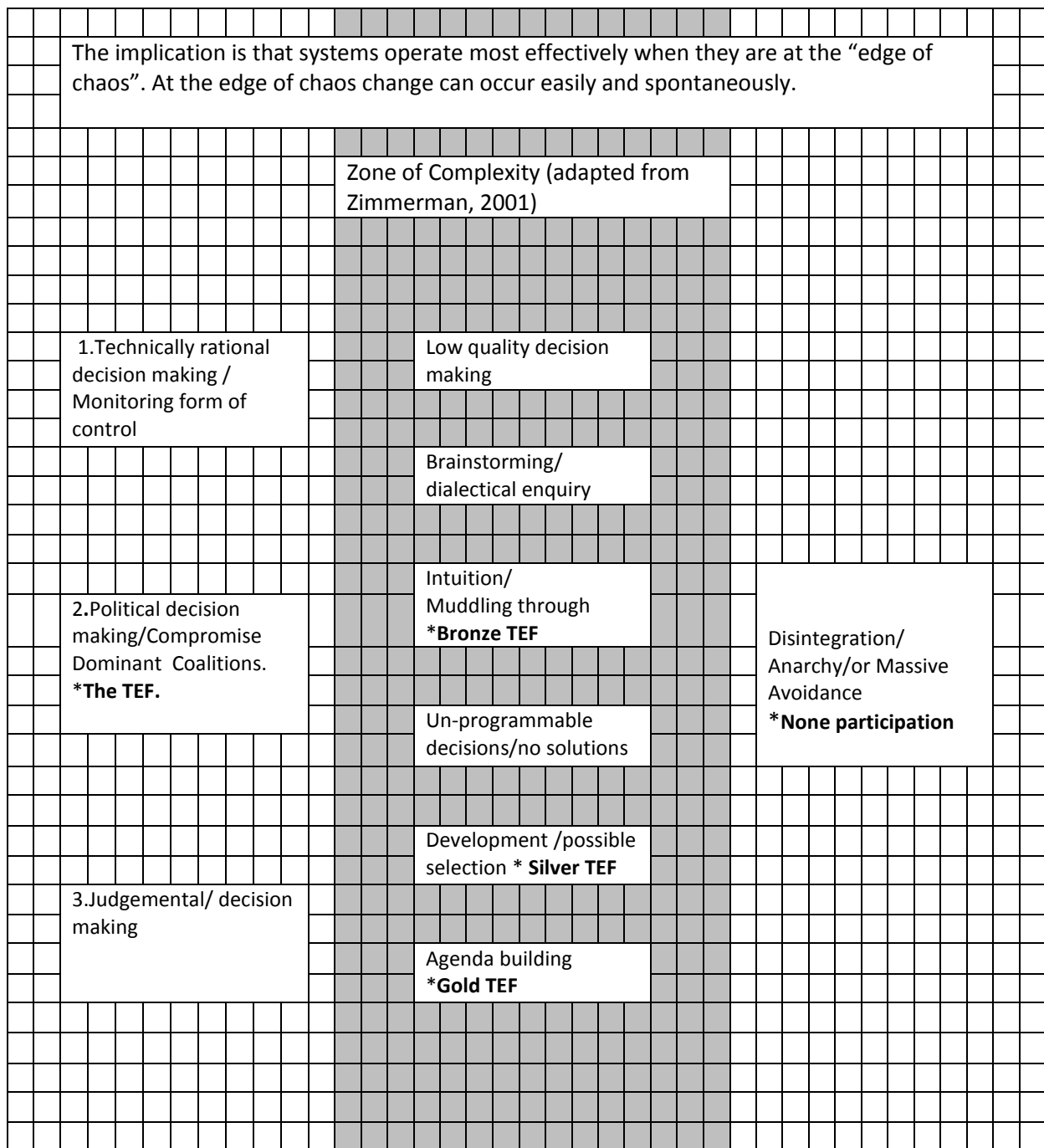


Figure A1.4 : Zimmerman's Zone of Complexity (2012)

This model identifies the factors which are capable of taking organisations to the edge of chaos (Stacey,) or what Zimmer calls the zone of complexity. The elements on the left represent the forces which drive organisations into this zone. The center represents the choices within the zone, and the area on the right represents what happens if no action is taken. The TEF belongs to the political decision category, and business school responses are also illustrated*.

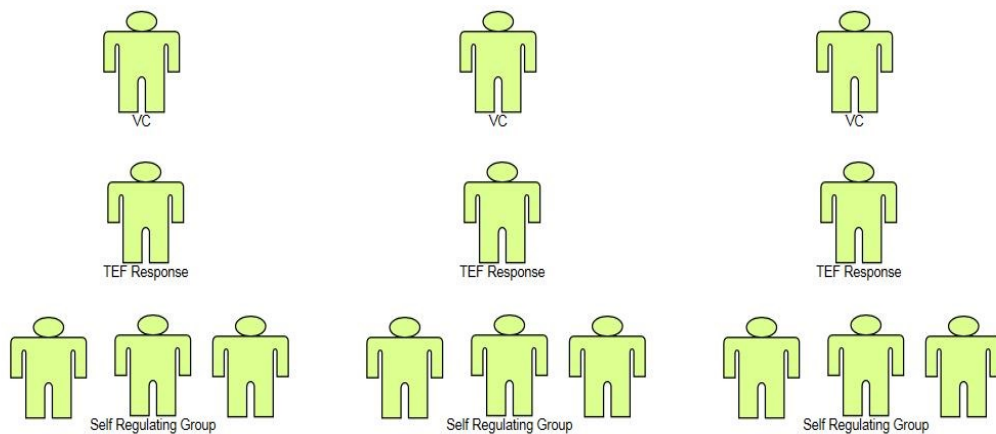


Figure A1.5: Example of flocking behaviour in business schools

These figures represent the response to the TEF from Business Schools which in each case was provided by one chosen individual within each university, reporting to their respective Vice Chancellors, while also being supported by loose self-regulating groups. This raised the question as to whether policies produce flocking behaviour in organisations?

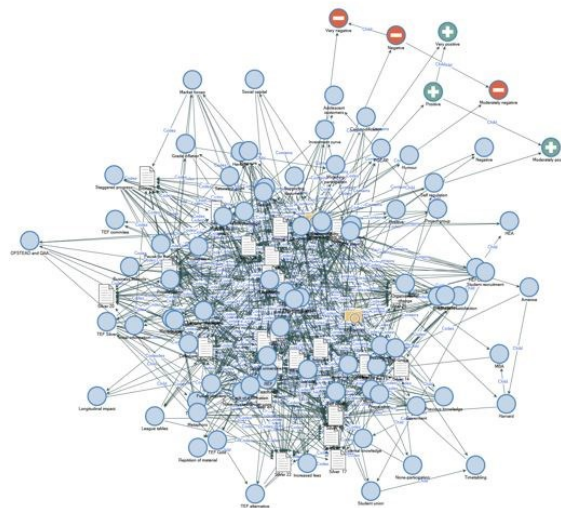


Figure A1.6: An example of the complexity generated when discussing business school responses to the TEF within the sample in NVivo.

Appendix 2: Ethical Principles Agreement

University of Chester - Faculty of Business and Management

Ethical Principles Agreement

Ethical principles you must adhere to from the start of your programme:

- All students and staff will operate with as full a consideration as is reasonably practical for the consequences of their work for society at large and groups within it. All staff and students are expected to act in accordance with the Principles of Management Education ([PRME](#)) and the [Prevent Agenda](#).
- Students and staff will handle all confidential information with appropriate levels of discretion, compliance with the law and with due diligence as to the security of that data. As standard practice students and staff will normally seek to prevent the publication or use of information in any way that could compromise a participant's confidentiality or identity.
- Any material being prepared for submission will be produced in such a way as to reduce the possibility of breaches of confidentiality and / or identification.
- All learning claimed for, and all work submitted for assessment, will be the student's own, unless clearly stated otherwise.
- Students and staff will try to avoid overburdening the participants in their research, causing them inconvenience or intruding into their private and personal domains.
- Participants will be informed of the risk, purpose and nature of any inquiry in which they are being asked to participate.
- Students and staff will avoid misleading research participants or withholding material facts about research of which they should be aware.
- Where the research methodology allows for it, a research participant will be expected to be provided with a copy of this document along with a consent form which will also indicate a participant's right of referral and appeal to the relevant Programme Team. Where the research methodology suggests that a different kind of consent is the only one possible this will be made clear and participants will be referred to relevant departmental web pages or otherwise made aware of these principles by the researcher.
- All students are required, before their work based projects and research projects begin, to complete a proposal with their tutor. Only after formal approval from their tutor (which may involve review by the Faculty Ethics Committee) will work normally be allowed to commence. Staff will need to seek approval from a Faculty's Ethics Committee member before commencing their projects.
- All members of staff and all students at all levels are required to read and agree to comply with these statements and to operate them in the full spirit in which they are written.
- Failure to comply with these statements may be regarded as a matter of academic malpractice and will be dealt with according to the relevant University guidelines, regulations and procedures.
- All work based learners, researchers and supervisory staff at all levels are required to indicate their acceptance of these Principles.
- Data collected for the purposes of student projects must be kept for a period of five years by the researcher, and data for staff research projects are required to be held for at least 10 years (if not indefinitely). In either case, such timings may be subject to much shorter obligations depending on the nature of the research project.

In signing below, I agree to the ethical principles outlined above, and any updates to these which may be made after signing (which will be posted on programme areas of the University's portal):

PRINT your name:
Tadzio Jodlowski

Your

signature:

A handwritten signature in black ink, appearing to read 'T. Jodlowski', written in a cursive style.

Date:20/06/17

Appendix 3: Interview questions and prompts

Business School responses towards the implementation of the Teaching Excellence Framework: A Complex Adaptive Systems perspective

Tadzio Jodlowski

Interview questions

1) Could you tell me about your role here?

Prompt: What do you know about the Teaching Excellence Framework (TEF) Here?

Prompt: How you think the response to the TEF has been organised?

2) To what extent does your role relate to the TEF and how?

Prompt: In your opinion, what knowledge do you think that you bring to the management of the TEF?

3) Could you tell me who else is involved and what roles do they have?

4) Could you tell me about how the TEF is managed here, and how that came about?

5) In what ways, if any, has the response to TEF here changed over time?

Prompt: For each change what do you think encouraged that change?

6) In what ways, if any, do you think the response to the TEF here might change in the future?

Prompt: In what ways, if any, have things changed since the Gold, Silver, and Bronze TEF's

Prompt: For each future change: What might prompt that change?

Aim: To explore the response from business schools towards the emergence of the Teaching Excellence Framework.

Objective 1: To explore the emergence of the TEF within Business Schools

Objective 2: To establish Business School responses towards the TEF

Objective 3: To evaluate the development of responses towards the TEF

Objective 4: To develop a framework which identifies links between TEF and CAS in order to assist with the management of its complexity?

Appendix 4 : Respondent agreement form (example)

Business School responses towards the implementation of the Teaching Excellence Framework: A Complex Adaptive Systems perspective

Tadzio Jodlowski

Please initial box

1. I confirm that I have read and understood the participant information sheet 1/6/17
for the above study and have had the opportunity to ask questions.

☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason and without my care or legal rights being affected.

☐

3. I agree to take part in the above study.

☐

Name of Participant

Date

Signature

Name of Person taking consent

Date

Signature

(if different from researcher)

Researcher

Date

Signature

Appendix 5. Example interview:

1) Could you tell me about your role here?

“Okay, but I started here two years ago... And the role kind of emerged because of the accountancy courses here. The course was really is re-validated and I was asked to have the managing lead on that. And since then... It’s sad because my only role is the course leader on the MBA... So what of experience I’ve got isn’t really used”.

Prompt: What do you know about the Teaching Excellence Framework (TEF) Here?

“Right... Very little in terms of process, I suppose erm... In terms of the basic sort of outcome in terms of the erm categorisation of the sea that’s fairly clear... There’s been a lot of media coverage of that erm... But in terms of the actual processes of discerning between categories and what is the difference between the categories of thing is very difficult... I know a little in a way that hasn’t really been communicated through work. It’s just what I picked up, you know, listening to people really... That really created a lot of frustration because we were awarded a Bronze award we found out about it may be the day before and, you know, we talked about it (amongst the staff) and it was almost like “what input of which had into this process?” And basically, you know, it sounds like it was a report writing exercise erm... And that really puts into question all the stuff that we do the things that the moment we are releasing the impact of it I think we will next year because it’s bound to affect us... Getting this award. Erm...and it’s just gonna put more pressure on us because... You know, no fault of our own really”.

Prompt: How you think the response to the TEF has been organised?

“Well, I think it was one person I’m pretty sure that it was one person in the business school. I’m not sure when the process started... probably about a year ago, maybe a bit longer erm at the time I think it was just dealt with at senior level. So was it really anything communicated about who was after this... who was dealing with this (the TEF) I don’t think I ever heard it communicated from what I understand I think it was one person. We didn’t receive any communication in terms of the, you know, corporate communication stuff that goes out”.

2) To what extent does your role relate to the TEF and how?

“In terms of the experience that I’ve got, in terms of what I’ve seen (Sigh) is the frustration that I find at the University I’m at. I mean, I went there because it’s smaller than my previous University and I thought that I could actually use the knowledge and already accrued and collaborate with other departments in my new University... Can actually put that kind of knowledge into practice quite effectively in smaller cohorts and you can see the effects it’s

like if you compare it to a big university you can't do it because, there's too many students and it's very difficult in terms of the numbers game...erm, and I thought "yeah" this could be quite a good chance in terms of, for example the personal mentoring of the students and put that process into place and see how that works. Except done quite a lot of that at my previous University... In terms of things like developing skills and reflection that sort of stuff... In the classroom erm. I thought "yes" this will be ideal but, I think that really what we've got to look at is in terms of how we as an institution can use these kind of things and move forward. It's frustrating... This is the thing because we are not utilising our strengths. I think we're doing is that we are trying to play the same game as the big universities and other sea we can't because in terms of re-sources don't have the same spend per student and we can't because we don't get those sorts of economies of scale and in terms of central spending... Blah blah blah... So I think they're just missing a massive opportunity and not using your skills in terms of the social interaction between student and staff".

Prompt: In your opinion, what knowledge do you think that you bring to the management of the TEF?

"I think in terms of mass mentoring, okay I've done that about 200 students to 20 mentors erm, you know, and I did that for about five years in my previous University have had quite at of experience of doing that. And obviously in terms of what that does is, okay, it doesn't necessarily improve the quality of teaching it does manager students expectations and I think that's part of the issue – if you can get the students to behave in a certain way it makes the teaching easier... and then you can actually start to apply, erm, things you might have thought of trying but which may have seen this manageable. Because if you've got a difficult cohort in if you can help to get them through mentoring into that train of thought... Then you can start to do stuff with them. I know that might sound as said before like a bit of a process that... But I think that if you can do with a lot of students like that then then you can deal with a few students like that, with mentoring in a smaller university like this one in a much better way. Generally, what we have is a high proportion of the local population at University... You've also got a proportion of that regional income in many cases from middle-class students. So I think what we've got here is a slightly different attitude in comparison in that they have not been pushed into it they want to...they want to do it, because in a way that have to do it because generally they'll be all right because they're quite well connected and the got quite a lot of income behind them from their parents... So I think it's just a different sort of dynamic".

2) Could you tell me who else is involved and what roles do they have?

"No".

“The students union” ?

Prompt: Where are they from within the University?

“Different departments...I think but no formal team”.

4) Could you tell me about how the TEF is managed here, and how that came about?

“Well, because I’ve only been there two years I haven’t really seen the development of any sort of errrrmm... Coherent teaching committee. That must exist... ,but they’re very sort of quiet about it. I would have thought that the TEF would have been connected to some sort of education committee at some stage at some point, you know, maybe fed up from departments or whatever. It could have been due to the upheaval but I don’t think they have any sort of departmental or teaching and learning team at the moment. By upheaval I mean the restructuring that’s recently occurred our University... ,You know, changes in schools and the number of schools. IHHHHHHHH...I can understand the argument in terms of competition in the market generating change in the need for restructuring but I think that universities are generally from the things I’ve seen in terms of other people’s research in terms of their budgeting and that sort of financial control. I think that universities are quite slow to respond, which is a bit of a contradiction really because you would think because of the things that are happening (in the sector) you think there would have been a faster response that I think we are still quite complacent. I think I restructuring was more in terms of the new, sort of, Vice Chancellor. I think that the old VC... I think that there was a lot of old stuff attached to it and I think that they wanted to shift that in terms of ...he was very authoritarian ... Draconian, basically... If you like, the model of “get as many students in as possible and get the departments to deal with them and if they don’t, punish them...the departments I mean... erm... It was that sort of attitude. I mean, perhaps I’m a bit biased because of the time, but this is what I’ve heard. There was I understand a collective sigh of relief when he went”.

Prompt: How was it organised formally or informally and from where?

“Formally...so formally that no-one really heard about It”.

5) In what ways, if any, has the response to TEF here changed over time?

“Sigh...no, but our telly when thinking of though erm... And is not the same...this is what I assumed would happen which is completely irrational but it reminded me of something like an institutional audit and before I knew about the report and all this sort of stuff, I thought that the TEF would be a case of somebody will come down and look at the various parts of the University and say “look, what do you do? How would you do it?” Like the QAA...and

stuff. And in the end I think what it's come down to is who can write the best reports.... Which is a real shame. What's interesting now at this University is that we're now working at targets in the business school in terms of student satisfaction and student marks, which are all doing we've actually written down on our appraisal process and basically what we've got to get is an 85% satisfaction on something similar to the NSS, we're actually applying it every single year, every module and every year... Which will certainly cause some pressures, certainly cost pressures for me... In terms of first-year for example I don't want them to be satisfied, I want them to try things and make mistakes... because that's part of the process... I don't want to be happy all the time... I know they're not happy in the second year, because nobody is... and what I'm sort of thinking is and this is my major bugbear with this process is that there is so much (sigh) in this process that we can't control... With the timetabling for example... I mean we have groups going into the evening. Another example is lessons on a Friday afternoon... Even if you're going to maintain attendance they're still going to be pretty fed up. In the students say things like "We could be at home... Or in the pub for whatever" a lot of them are still quite adolescent remember, well most of them are".

Prompt: In what way has the management response to the TEF changed since it was first organised?

"I think that it was treated like an "as is" situation erm... Probably, I don't know, in the same way that the REF is treated. I think maybe people saw it in the same way. In the name of it even sounds almost the same...like a mirror of it... And the sort of process. And if you think it doesn't then that reveals that it's a sort of major ground shift... And that's something that until I discussed it just now I never really thought of before".

Prompt: For each change what do you think encouraged that change?

"I'm just wondering... In this university... Where not as financially stable as for example some of the larger universities. That have lots of money and they are ok... I think we probably have to struggle more from money on some of the universities. I think what will happen, or what has happened is, I don't know, the sort of (long pause)(small sigh) the TEF is still there... it's then an issue but I think part of it is that they (the senior management) think "well do what we've always done and it will be fine! " I think that the TEF here was almost like an "as is" rather than thinking about the process and reflection on improvement. I'd don't think that took place... I'd love to see our report. In terms of the TEF this university appealed and the appeal got thrown out".

Prompt: What else has changed?

6) In what ways, if any, do you think the response to the TEF here might change in the future?

“Yes. Definitely. Here at our university definitely anyway... I mean the places that have got gold they will just think it’s the best thing ever and I’m hoping that what would happen is that they would actually consult a bit more before submitting the TEF in terms of the process that the going through, because I think generally across higher education I think it’s this thing where erm the senior management, probably going back to what I heard on the radio this morning that senior management in positions where they a command reasonable salaries and they want to be seen to be doing something for that that amount of salary and basically to the detriment of people who are actually doing the job. People are working with the students on a regular basis and that sort of experience (lecturers teaching experience) should be passed up and at my previous university there are means of doing that this University at the moment I’m not sure that there are... Generally, I think that policy and management is tainted by those few individuals who you know don’t care. We all know them... We’ve all had them. But, the processes which are in place now... I think we’ve probably gone too far down the process route... And we’ve made it almost like Draconian... “You will be at work at this time you will do this...” And I think that this just gives us more pressure and produces the flexibility”.

“Will the TEF have an impact on international students? (laughs) no... Because we’ve had a new Dean and I don’t know how he’s managed it but we are basically not taking on any international students in the final year. The thing is the TEF is bound to affect international recruitment... I mean, I’ve been to Hong Kong and the list of institutions that were at the careers fair and I was on the table from my previous university and you get the other tables representing the bigger universities... And I’m sat at a desk with XXXXXXXX University written on it and I have the odd one coming up because one out there were down at the bottom of the list. Erm... So I think TEF will have an effect on international recruitment and I think it will affect our students because I think once they (senior management) realise what’s going on a bit more (in terms of the marketisation of the sector) I don’t think it’s quite hit yet Britain next year it will. And I think “okay” will still get students to think we could potentially get more if we had better TEF scores”.

“I don’t think that there will be any also crashes because of the TEF and I do think there will because of the way this stuff has been managed. In terms of for example an overreliance on overseas students, the over expansion of campus with borrowing and stuff like that... And also the erm... Way that some of the universities are now starting to operate such as at XXXXXXXX University where they’ve got rid of the experienced staff just got in cheaper staff all that sort of stuff, you know, that will have more of an effect than the TEF but in terms of disruption... the result of the TEF is that the measurement of performance is inappropriate. Education is an important part of society and it can’t just be bought and sold like a

commodity like the National health which suffers problems from that process accordingly. In the next 10 years universities are going to have to get a lot more flexible and University they may need to increase our international student activity again which I think we could accomplish to fill any gaps caused by the TEF. However there is an insecurity in the University due to the fact that the containment and progression process remains quite rigid from the previous Draconian management style and the TEF at our university still seems to be operated for the moment at least from a central department which informs us from time to time and in a sense sets the boundaries”.

Prompt: *In what ways, if any, have things changed since the Gold, Silver, and Bronze TEF’s were allocated?*

“It’s too early to tell...”

End of Document